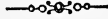




THE ZOOLOGICAL RECORD.



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P. L. SCLATER,

Secretary.

Feb. 1st, 1892.

ZOOLOGICAL SOCIETY OF LONDON,
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LIST OF VOLUMES
OF THE
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The Record of Zoological Literature, 1864. Volume First.
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.Z.S.,
&c. London, 1865. Price 10s.

The Record of Zoological Literature, 1865. Volume Second.
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.Z.S.,
&c. London, 1866. Price 10s.

The Record of Zoological Literature, 1866. Volume Third.
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.R.S.,
F.Z.S., &c. London, 1867. Price 10s.

The Record of Zoological Literature, 1867. Volume Fourth.
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.R.S.,
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The Record of Zoological Literature, 1868. Volume Fifth.
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.R.S.,
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The Record of Zoological Literature, 1869. Volume Sixth.
Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.R.S.,
F.Z.S., &c. London, 1870. Price 30s.

The Zoological Record for 1870; being Volume Seventh of the
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F.R.S., Professor of Zoology and Comparative Anatomy in the Uni-
versity of Cambridge, F.L.S., V.P.Z.S., &c. London, 1871. Price 10s.

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Record of Zoological Literature. Edited by ALFRED NEWTON, M.A.,
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versity of Cambridge, F.L.S., V.P.Z.S., &c. London, 1873. Price 10s.

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Record of Zoological Literature. Edited by ALFRED NEWTON, M.A.,
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versity of Cambridge, F.L.S., V.P.Z.S., &c. London, 1874. Price 10s

The Zoological Record for 1873; being Volume Tenth of the
Record of Zoological Literature. Edited by EDWARD CALDWELL
RYE, F.Z.S., Librarian to the Royal Geographical Society. London,
1875. Price 10s.

The Zoological Record for 1874 ; being Volume Eleventh of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1876. Price 10s.

The Zoological Record for 1875 ; being Volume Twelfth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1877. Price 10s.

The Zoological Record for 1876 ; being Volume Thirteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1878. Price 10s.

The Zoological Record for 1877 ; being Volume Fourteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1879. Price 10s.

The Zoological Record for 1878 ; being Volume Fifteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1880. Price 10s.

The Zoological Record for 1879 ; being Volume Sixteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1881. Price 10s.

The Zoological Record for 1880 ; being Volume Seventeenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1881. Price 10s.

The Zoological Record for 1881 ; being Volume Eighteenth of the Record of Zoological Literature. Edited by EDWARD CALDWELL RYE, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1882. Price 10s.

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The Zoological Record for 1885 ; being Volume the Twenty-second of the Record of Zoological Literature. Edited by F. JEFFREY BELL, M.A., Sec. R.M.S., Professor of Comparative Anatomy and Zoology in King's College, London. London, 1886. Price 10s.

The Zoological Record for 1886 ; being Volume the Twenty-third of the Record of Zoological Literature. Edited by FRANK E. BEDDARD, M.A., F.Z.S., Prosector and Davis Lecturer to the Zoological Society of London. London, 1887. Price 10s.

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The Zoological Record for 1890 ; being Volume the Twenty-seventh of the Record of Zoological Literature. Edited by FRANK E. BEDDARD, M.A., F.Z.S., Prosector and Davis Lecturer to the Zoological Society of London. London, 1892. Price 30s.

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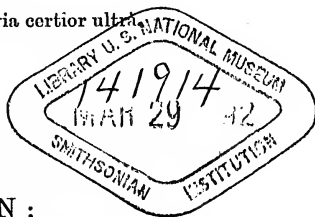
RECORD OF ZOOLOGICAL LITERATURE.

EDITED BY

FRANK E. BEDDARD, M.A., F.Z.S.,

PROSECTOR AND DAVIS LECTURER TO THE ZOOLOGICAL SOCIETY OF LONDON.

Explorate solum : sic fit via certior ultra



LONDON :

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M.DCCC.XCII.

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PREFACE.

THE present volume of the ZOOLOGICAL RECORD has been prepared on nearly the same plan as that of last year. The only changes are in the staff of Recorders: Mr. Evans having unfortunately been obliged, through pressure of other work, to give up the record of the *Aves*, his place has been filled by Dr. R. Bowdler Sharpe; Mr. Latter having been unable to continue the task of recording the *Brachiopoda*, *Polyzoa*, *Echinodermata*, and *Spongiæ*, the records of the two latter groups have been supplied by Mr. Minchin, while Mr. Mitchell has undertaken the *Brachiopoda* and *Polyzoa* in addition to the *Mollusca* and *Vermes*. I have the pleasure of acknowledging my indebtedness to Mr. B. B. Woodward for much assistance in revising the following list of the Abbreviated Titles, and in other ways.

FRANK E. BEDDARD.

February, 1892.

LIST OF THE ABBREVIATED TITLES
OF THE PRINCIPAL
JOURNALS AND TRANSACTIONS OF LEARNED SOCIETIES
WHICH CONTAIN ZOOLOGICAL PAPERS.

- A Magyar Akad. evkön.*—A Magyar tudományos Akadémia évkönyvei.
- Abh. Ak. Berl.*—Abhandlungen der königlich Akademie der Wissenschaften zu Berlin. (Also *SB.*)
- Abh. Bayer. Ak.*—Abhandlungen der mathematisch-physikalischen Classe der k. Bayerischen Akademie der Wissenschaften (Munich). (Also *SB.*)
- Abh. Böhm. Ges.*—Abhandlungen der mathematisch-naturwissenschaftlichen Classe der k. Böhmischen Gesellschaft der Wissenschaften (Prague): (Called also *Rozpravy třídy mathematicko-přírodovědecké královské české společnosti nauk.*) (Also *SB.*)
- Abh. Ges. Götting.*—Abhandlungen der k. Gesellschaft der Wissenschaften zu Göttingen.
- Abh. Ges. Halle.*—Abhandlungen der naturforschenden Gesellschaft in Halle. (Also *Ber.*)
- Abh. Ges. Hamb.*—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturw. Verein in Hamburg.
- Abh. Ges. Isis.*—Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (See *SB.*)
- Abh. Ges. Königsb.*—Abhandlungen der k. physikalisch-ökonomischen Gesellschaft in Prousson (Königsberg). (Also *SB.*)
- Abh. naturf. Ges. Görlitz.*—Abhandlungen der naturforschenden Gesellschaft zu Görlitz.
- Abh. naturh. Ges. Nürnberg.*—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (See *J.B.*)
- Abh. Sächs. Ges.*—Abhandlungen der k. Sächsischen Gesellschaft der Wissenschaften (Leipzig). (Also *Ber.*)
- Abh. Schles. Ges.*—Abhandlungen der Schlesischen Gesellschaft f. vaterländische cultur (Breslau). (Also *JB.*)
- Abh. Schw. pal. Ges.*—Abhandlungen der Schweizerischen paläontographischen Gesellschaft (Bâle).

* Those periodicals marked with an asterisk (*) are no longer published.

- Abh. Senck. Ges.*—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft (Frankfort). (Also *Ber.*)
- Abh. Ver. Brem.*—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen.
- Abh. zool. Mus. Dresden*—Abhandlungen und Berichte des k. zoologischen, etc., Museums in Dresden.
- Act. Ac. Bordeaux*—Actes de l'Académie nationale des Sciences, Belles Lettres et Arts de Bordeaux.
- Act. Ac. Córdoba*—Actas de l'Academia nacional de Ciencias en Córdoba (Buenos Ayres).
- Act. Lund.*—Acta Universitatis Lundensis (Lund). (Called also *Lunds Universitets Årsskrift*.)
- Act. Soc. Fenn.*—Acta Societatis Scientiarum Fennicæ (Helsingfors).
- Act. Soc. Helv.*—Actes de la Société Helvétique des Sciences naturelles (Called also *Verhandl. d. schweiz. Naturforsch. Gesells.*).
- Act. Soc. Jura.*—Actes de la Société Jurassienne d'Émulation.
- Act. Soc. L. Bord.*—Actes de la Société Linnéenne de Bordeaux. (Also *Comptes rendus*.)
- Act. Upsala.*—Acta Universitatis Upsalensis. (Called also *Upsala Universitets Årsskrift*.)
- **Aid*—C. O. Waterhouse's Aid to the Identification of Insects (Janson : London).
- Alb. Nat.*—Album der Natuur (Harting : Haarlem).
- Am. Geol.*—The American Geologist (Calvin et alii : Minneapolis).
- Am. J. Sci.*—American Journal of Science. (New Haven.)
- Am. Micr. J.*—American Monthly Microscopical Journal (Washington).
- Am. Nat.*—The American Naturalist (Philadelphia).
- Anat. Anz.*—Anatomischer Anzeiger (Bardeleben : Jena).
- An. Mus. B. Aires*—Anales del Museo nacional, Buenos Aires.
- An. Mus. Costa Rica*—Anales del Museo nacional, Republica de Costa Rica (San José).
- An. Mus. La Plata*—Anales del Museo, La Plata (Buenos Ayres).
- An. Mus. nac. Mexico*—Anales del Museo nacional de México.
- An. Soc. Arg.*—Anales de la Sociedad Científica Argentina (Buenos Aires).
- An. Soc. Esp.*—Anales de la Sociedad Española de Historia Natural (Madrid).
- Ann. Acc. aspir. Nat.*—Annali dell' Accademia degli aspiranti Naturalisti (Naples).
- Ann. Ent. Belg.*—Annales de la Société Entomologique de Belgique (Brussels).
- Ann. Géol. univ. Paris*—Annuaire Géologique universel, Revue de Géologie et Paléontologie (Carey & Douvillè).
- Ann. Hofmuseum Wien*—Annalen des k. k. naturhistorischen Hofmuseums (von Hauer : Vienna).
- Ann. Lomb. Venet.*—Annali di Scienze del regno Lombardo-Venetiano.
- Ann. Mal.*—Annales de Malacologie (Servain : Paris).
- Ann. Micrograph.*—Annales de Micrographie spécialement consacrées à la Bactériologie aux Protophytes et aux Protozoaires (Miquel : Paris).

- Ann. Mus. Belg.*—Annales du Musée royal d'Histoire Naturelle de Belgique (Brussels).
- Ann. Mus. Genov.*—Annali del Museo civico di Storia Naturale di Genova (Genoa).
- Ann. Mus. Marseille*—Annales du Musée d'Histoire Naturelle de Marseille. Zoologie (Marion : Marseilles).
- Ann. N. H.*—Annals and Magazine of Natural History (London).
- Ann. N. York Ac.*—Annals of the New York Academy of Sciences. (Also *Trans.*)
- Ann. Sci. Géol.*—Annales des Sciences Géologiques (Hébert & Milne-Edwards : Paris).
- Ann. Sci. Nat.*—Annales des Sciences Naturelles (Paris).
- Ann. Soc. Agric. Lyon*—Annales de la Société d'Agriculture, Histoire Naturelle, et Arts utiles de Lyon (Lyons & Paris).
- Ann. Soc. Brux.*—Annales de la Société Scientifique de Bruxelles (Brussels).
- Ann. Soc. Char.*—Annales de la Société des Sciences Naturelles de la Charente Inférieure (= Académie de la Rochelle).
- Ann. Soc. Ém. Vosges*—Annales de la Société d'Émulation du Département des Vosges (Epinal).
- Ann. Soc. Ent. Fr.*—Annales de la Société Entomologique de France (Paris).
- Ann. Soc. Géol. Belg.*—Annales de la Société Géologique de Belgique (Liège).
- Ann. Soc. Géol. Nord*—Annales de la Société Géologique du Nord (Lille). (Also *Mémoires.*)
- Ann. Soc. L. Lyon (n.s.)*—Annales de la Société Linnéenne de Lyon. Nouvelle série.
- Ann. Soc. Mal. Belg.*—Annales de la Société Malacologique de Belgique (Brussels).
- Ann. Soc. Mod.*—Annuario della Società dei Naturalisti di Modena. (See *Atti.*)
- Ann. Univ. Toscane*—Annali delle Università Toscane (Pisa).
- Ant. Annual*—The Antananarivo Annual and Madagascar Magazine (Sibree : Antananarivo).
- Anz. Ak. Wien*—Anzeiger der mathematisch-naturwissenschaftlichen Classe der k. Akademie der Wissenschaften zu Wien (Vienna).
- Appalachia*—Appalachia: the Journal of the Appalachian Mountain Club (Boston).
- Arb. Inst. Würzb.*—Arbeiten aus dem zoologisch-zootomischen Institute in Würzburg.
- Arb. z. Inst. Wien*—Arbeiten aus dem zoologischen Institute der Universität Wien (Vienna).
- Arb. z. Inst. Graz*—Arbeiten aus dem zoologischen Institute zu Graz (Leipsic).
- Arch. Anat. Phys.*—Archiv für Anatomie und Physiologie (His, Braune, & Du Bois Reymond : Leipzig).
- Arch. Biol.*—Archives de Biologie (Van Beneden & Van Bambeke : Ghent).

- Arch. f. Anthropol.*—Archiv für Anthropologie : Zeitschrift für Naturgeschichte und Urgeschichte des Menschen (Brunswick).
- Arch. f. Math. og Naturv.*—Archiv for Mathematik og Naturvidenskab (Lie, G. O. Sars, Kristiania).
- Arch. f. Nat.*—Archiv für Naturgeschichte. Neue Folge (Berlin).
- Arch. f. Thierheilk.*—Archiv für Thierheilkunde.
- Arch. ges. Phys.*—Archiv für die gesammte Physiologie des Menschen und der Thiere (Pflüger : Bonn).
- Arch. Ital. Biol.*—Archives Italiennes de Biologie ; Revues, Résumés, Reproductions des travaux scientifiques Italiens (Emery & Mosso : Turin).
- Arch. mikr. Anat.*—Archiv für mikroskopische Anatomie (Bonn).
- Arch. Miss. Sci.*—Archives des Missions Scientifiques et Littéraires (Paris).
- Arch. Mus. Lyon*—Archives du Muséum d'Histoire Naturelle de Lyon.
- Arch. Mus. R. Jan.*—Archivos do Museu nacional do Rio de Janeiro.
- Arch. Mus. Teyl.*—Archives du Musée Teyler (Haarlem).
- Arch. Nat. Liv.*—Archiv für die Naturkunde Liv-, Ehst-, und Kurlands (Dorpat).
- Arch. naturv. Landesforsch. Böhmen*—Archiv für naturwissenschaftliche Landesdurchforschung von Böhmen (Prag).
- Arch. Néerl.*—Archives Néerlandaises des Sciences Exactes et Naturelles (Bosscha : Haarlem).
- Arch. Phys.*—Archives de Physiologie Normale et Pathologique (Brown-Séquard : Paris).
- Arch. Sci. Nat.*—Archives des Sciences Physiques et Naturelles (Geneva).
- Arch. slav. Biol.*—Archives slaves de Biologie (Mendelssohn-Richet : Paris).
- Arch. Ver. Mecklenb.*—Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg.
- Arch. Zeeuwsch Genoots. Wetensch.*—Archief vroegere en latere Mededoelingen voornamelijk in Betrekking tot Zeeland uitgegeven door het Zeeuwsch Genootschap der Wetenschappen (Middelburg).
- Arch. Z. expér.*—Archives de Zoologie expérimentale et générale (Lacaze-Duthiers : Paris).
- Atti Acc. Gioen.*—Atti dell' Accademia Gioenia di Scienze Naturali (Catania).
- Atti Acc. Napoli*—Atti della R. Accademia delle Scienze Fisiche e Matematiche.
- Atti Acc. Palermo*—Atti della R. Accademia di Scienze, Lettere e Belle Arti di Palermo (Palermo).
- Atti Acc. Pontaniana*—Atti dell' Accademia Pontaniana (Naples).
- Atti Acc. Pontif. Lincei*—Atti dell' Accademia Pontificia de' nuovi Lincei.
- Atti Acc. Tor.*—Atti della R. Accademia delle Scienze di Torino (Turin).
- Atti Ist. Nap.*—Atti del R. Istituto d'incoraggiamento alle Scienze Naturali Economiche e Tecnologiche, &c., di Napoli (Naples).
- Atti Ist. Venet.*—Atti del R. Istituto Veneto di Scienze, Lettere et Arti, &c. (Venice).
- Atti [Mem. Rend.] Acc. Rom.*—Atti [Memorie : Rendiconti] della R. Accademia dei Lincei (Rome).

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- Atti Soc. Ital.*—Atti della Società Italiana di Scienze Naturali (Milan).
- Atti Soc. Ven.-Trent.*—Atti della Società Veneto-Trentina di Scienze Naturali residente in Padova (Padua). (Also *Bull.*)
- Atti Univ. Genova*—Atti della R. Università di Genova.
- Auk*—The Auk. A Quarterly Journal of Ornithology. (Continuation of the *Bulletin of the Nuttall Ornithological Club.*)
- Ausland*—Das Ausland (Stuttgart).

Beitr. Morphol. Morphog.—Beiträge zur Morphologie und Morphogenie (Gerlach : Stuttgart).

Beitr. Pal. Oesterr.-Ung. — Beiträge zur Paläontologie Oesterreich-Ungarn's und des Orients (Mojsisovics & Neumayr : Vienna).

Beitr. Russ. Reiches (2)—Beiträge zur Kenntniss des Russischen Reiches und der angrenzenden Länder Asiens. Neue Folge (Schrenck & Maximowics : St. Petersburg).

Ber. Ges. Freiburg—Berichte der naturforschenden Gesellschaft zu Freiburg (Freiburg, i Br.).

Bergens Mus. Aarsber.—Bergens Museum Aarsberetning (Bergen).

Ber. Ges. Chemn.—Bericht der naturwissenschaftlichen Gesellschaft zu Chemnitz.

Ber. Ges. Halle—Bericht über die Sitzungen der naturforschenden Gesellschaft zu Halle. (Also *Abhandl.*)

Ber. Ges. Hanau = *JB. wetter. Ges.*

Ber. Komm. wiss. Unters. deutsch. Meere—Bericht der Kommission zur Untersuchung der deutschen Meere.

Ber. Naturf. Ärzte—Ämtliche Bericht deutscher Naturforscher und Ärzte.

Ber. naturf. Ges. Bamberg—Bericht der naturforschenden Gesellschaft in Bamberg.

Ber. naturhist. Mus. Hamburg—Bericht des naturhistorischen Museums in Hamburg.

Ber. natur. Ver. Passau—Bericht des naturhistorischen Vereins in Passau.

Ber. naturw. Ver. Regensburg — Bericht der naturwissenschaftlichen Vereins in Regensburg. (Formerly *CB.*).

Ber. Oberhess. Ges.—Bericht der Oberhessischen Gesellschaft für Natur- und Heilkunde (Giessen).

Ber. Offenb. Ver.—Bericht über die Thätigkeit des Offenbacher Vereins für Naturkunde (Offenbach-on-the-Main).

Ber. Primärsch. Böhm.-Leipa—Bericht der Primärschule in Böhmisches Leipa.

Ber. Sächs. Ges.—Bericht ueber die Verhandlungen der königlichen Sächs. Gesellschaft der Wissenschaft in Leipzig. (Also *Abhandl.*)

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- Ber. St. Gall. Ges.*—Bericht über die Thätigkeit der St. Gallischen naturwissenschaftlichen Gesellschaft (St. Gallen).
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- Ber. Ver. Cassel.*—Berichte des Vereins für Naturkunde zu Cassel.
- Ber. Ver. Fulda.*—Bericht des Vereins für Naturkunde in Fulda.
- Ber. Ver. Pass.*—Bericht der naturwissenschaftlichen Vereins in Passau.
- Berl. Monats.*—Berliner Monatshefte.
- B. E. Z.*—Berliner Entomologische Zeitschrift.
- Bibl. haut. études.*—Bibliothèque de l'école des hautes études. Section des Sciences Naturelles (Paris).
- Bibl. univ.*—Bibliothèque universelle et Revue Suisse (Geneva). (See *Arch. Sci. Nat.*)
- Bibl. Zool.*—Bibliotheca Zoologica (Leipsic).
- Bidr. Finl. Nat.*—Bidrag till Kännedom af Finlands Natur och Folk (Helsingfors).
- Bih. Sv. Ak. Handl.*—Bihang till K. Svenska Vetenskaps-Akademiens Handlingar (Stockholm).
- Bijdr. Dierk.*—Bijdragen tot de Dierkunde (Amsterdam).
- Bijdr. Taal-, &c., Ned. Indië* (4)—Bijdragen tot de Taal-, Land-, en Volkenkunde van Nederlandsch Indië 4^{de} Volgreeks (The Hague).
- Biol. Centralbl.*—Biologisches Centralblatt (Rosenthal : Erlangen).
- Biol. Fören.*—Biologiska Föreningens Föreläsningar. Verhandlungen des biologischen Vereins in Stockholm. (Figerstedt : Stockholm.)
- Bol. Ac. Arg.*—Boletín de la Academia nacional de Ciencias de la Republica Argentina (Cordoba).
- Bol. geol. S. Paulo.*—Boletim da Comissão geographica e geologica da Provincia de S. Paulo.
- Bol. Mus. la Plata.*—Boletín del Museo la Plata (Buenos Ayres).
- Bol. Com. Geol.*—Bollettino del R. Comitato Geologico d'Italia (Roma).
- Boll. Mus. Zool. Anat. Comp. Torino.*—Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino.
- Boll. Nat.*—Now *Riv. Ital. Sci. Nat.*
- Boll. scient.*—Bollettino scientifico (Maggi, Zoja, & Giovanni : Pavia).
- Boll. Soc. Adr.*—Bollettino della Società Adriatica di Scienze de Naturali (Trieste).
- Bol. Soc. Geogr. Lisboa.*—Boletim da Sociedade de Geographia de Lisboa (Lisbon).
- Bol. Soc. Ital. Micr.*—Bollettino della Società Italiana dei Microscopisti (Acireale).
- Boll. Soc. geol. Ital.*—Bollettino della Società geologica Italiana (Rome).
- Boll. Soc. Nat. Napoli.*—Bollettino della Società di Naturalisti in Napoli. (Formerly *Rivista italiana di scienze naturali* [Circolo degli aspiranti naturalisti].)
- Bot. Centralbl.*—Botanisches Centralblatt. Referentes-Organ für das Gesamtgebiet der Botanik des In- und Auslandes (Ullwein & Behrens : Cassel).
- Bot. Z.*—Botanische Zeitung (Halle).

- Brit. Med. J.*—British Medical Journal (London).
- Bull. Ac. Belg.*—Bulletin de l'Académie royale des Sciences, des Lettres, et des Beaux Arts de Belgique (Brussels). (Also *Mem.*)
- Bull. Ac. Hippone*—Bulletin de l'Académie d'Hippone (Bône).
- Bull. Am. Mus. Nat. Hist.*—Bulletin of the American Museum of Natural History (New York).
- **Bull. Brooklyn Soc.*—Bulletin of the Brooklyn Entomological Society (New York).
- Bull. Brookville Soc.*—Bulletin of the Brookville Society of Natural History (Brookville, Indiana, U.S.A.).
- Bull. Buff. Soc.*—Bulletin of the Buffalo Society of Natural Sciences.
- Bull. Bussey Inst.*—Bulletin of the Bussey Institution (Boston).
- Bull. Chicago Ac. Sci.*—Bulletin of the Chicago Academy of Sciences.
- Bull. Cornell Univ.*—Bulletin of the Cornell University. (Ithaca.)
- Bull. Denison Univ.*—Bulletin of the Scientific Laboratories of Denison Universities (Granville, Ohio).
- Bull. Dep. Agric. Ent.*—U.S. Department of Agriculture. Division of Entomology. Bulletin (Washington).
- Bull. Des Moines Ac.*—Bulletin of the Des Moines Academy of Sciences (Des Moines, Iowa).
- Bull. Ent. Ital.*—Buletino della Società Entomolog(ica) Italiana (Florence).
- Bull. Ess. Inst.*—Bulletin of the Essex Institute (Salem, U.S.A.).
- Bull. hebdom. Ass. sci. Fr.*—Bulletin hebdomadaire de l'Association scientifique de France.
- Bull. Illin. Lab. N. H.*—Bulletin of the Illinois State Laboratory of Natural History. (Champaign, Illinois.)
- Bull. Inst. Nat. Genevois*—Bulletin de l'Institut nationale Genevois.
- Bull. Lab. Iowa*—Bulletin from the Laboratories of Natural History of the State University of Iowa (Iowa city).
- Bull. Minnesota Acad.*—Bulletin of the Minnesota Academy of Natural Sciences.
- Bull. Mosc.*—Bulletin de la Société impériale des Naturalistes de Moscou (Menzbier, Moscow).
- Bull. Mus. Belg.*—Bulletin du Musée royal d'Histoire Naturelle de Belgique (Brussels).
- Bull. Mus. C. Z.*—Bulletin of the Museum of Comparative Zoology of Harvard College (Cambridge, U.S.A.).
- Bull. Nat. Hist. Soc. New Brunswick*—Bulletin of the Natural History Society of New Brunswick (St. John's, N.B.).
- Bull. New York Mus. Nat. Hist.*—Bulletin of the New York State Museum of Natural History (Albany).
- Bull. Ohio Exp. Station*—Bulletin of the Ohio Agricultural Experiment Station, Technical Series (Columbus).
- Bull. Pétersb.*—Bulletin de l'Académie impériale des Sciences de St. Pétersbourg.
- Bull. Phil. Soc. Wash.*—Bulletin of the Philosophical Society of Washington.

- Bull. Sci. Fr. Belg.*—Bulletin Scientifique de la France et de la Belgique (Giard : Paris).
- Bull. Sedalia Soc.*—Bulletin of the Sedalia Natural History Society (Sedalia, Mo.).
- Bull. Soc. Ac. Brest*—Bulletin de la Société Académique de Brest.
- Bull. Soc. Acclim.*—Bulletin mensuel de la Société nationale d'Acclimatation de Paris (Paris).
- Bull. Soc. Angers*—Bulletin de la Société d'Études scientifiques d'Angers (Angers).
- Bull. Soc. Anthropol. Lyon*—Bulletin de la Société d'Anthropologie de Lyon.
- Bull. Soc. Anthropol. Par.*—Bulletin de la Société d'Anthropologie de Paris.
- Bull. Soc. Autun*—Société d'Histoire Naturelle d'Autun.
- Bull. Soc. Belg. Micr.*—Bulletin de la Société Belge de Microscopie (Brussels).
- Bull. Soc. Béziers*—Bulletin de la Société d'Étude des Sciences Naturelles de Béziers. Comptes rendus des Séances (Béziers).
- Bull. Soc. Borda-Dax*—Bulletin de la Société de Borda (Dax).
- Bull. Soc. Colm.*—Bulletin de la Société d'Histoire Naturelle de Colmar.
- Bull. Soc. d'Elbeuf.*—Bulletin de la Société d'étude des sciences naturelles d'Elbeuf.
- Bull. Soc. Dinan.*—Bulletin de la Société des Naturalistes Dinantais (Dinant).
- Bull. Soc. Ent. Suisse*—See *MT. Schw. ent. Ges.*
- Bull. Soc. Ent. Fr.*—Bulletin des séances de la Société Entomologique de France (Paris). (See *Ann.*).
- Bull. Soc. Étud. sci. Paris*—Bulletin de la Société d'Études scientifiques de Paris.
- Bull. Soc. Finistère*—Bulletin de la Société d'Études scientifiques du Finistère (Morlaix).
- Bull. Soc. Geogr.*—Bulletin de la Société de Géographie (Paris).
- Bull. Soc. Géol.*—Bulletin de la Société Géologique de France (Paris).
- Bull. Soc. L. Bruxelles*—Bulletin de la Société royale Linnéenne de Bruxelles.
- Bull. Soc. L. Nord France*—Bulletin de la Société Linnéenne du Nord de la France (Amiens).
- Bull. Soc. L. Norm.*—Bulletin de la Société Linnéenne de Normandie (Caen).
- Bull. Soc. Mal. Fr.*—Bulletin de la Société Malacologique de France (Paris).
- Bull. Soc. Mal. Ital.*—Bullettino della Società Malacologica Italiana (Pisa).
- Bull. Soc. Metz*—Bulletin de la Société d'Histoire Naturelle de Metz (formerly du Département de la Moselle).
- Bull. Soc. Murith.*—Bulletin des travaux de la Société Murithienne du Valais (Neuchâtel).
- Bull. Soc. Nancy*—Bulletin de la Société des Sciences de Nancy (Paris).
- Bull. Soc. Neuchatel*—Bulletin de la Société des Sciences Naturelles de Neuchatel.

- Bull. Soc. Philom.*—Bulletin de la Société Philomathique de Paris.
- Bull. Soc. Rouen*—Bulletin de la Société des Amis des Sciences Naturelles de Rouen (Rouen).
- Bull. Soc. Sarthe*—Bulletin de la Société d'Agriculture, des Sciences, &c., de la Sarthe (Le Mans).
- Bull. Soc. Saone*—Bulletins de la Société des Sciences Naturelles de Saone-et-Loire (Chalons sur Saone.) (Also *Mem.*)
- Bull. Soc. Savoie*—Bulletin de la Société d'Histoire Naturelle de Savoie (Chambéry).
- Bull. Soc. Sci. Nat. Ouest France*—Bulletin de la Société des Sciences Naturelles de l'Ouest de la France (Nantès).
- Bull. Soc. Sci. Phys. Nat. Toulouse*—Bulletin de la Société des Sciences Physiques et Naturelles de Toulouse (Toulouse).
- Bull. Soc. Stat. Isère*—Bulletin de la Société de Statistique des Sciences Naturelles, &c., du Département de l'Isère (Grenoble).
- Bull. Soc. Sud-Est*—Bulletin de la Société des Sciences Naturelles du Sud-Est (Grenoble).
- Bull. Soc. Toulouz.*—Bulletin de la Société d'Histoire Naturelle de Toulouse.
- Bull. Soc. Vaud.*—Bulletin de la Société Vaudoise des Sciences Naturelles (Lausanne).
- Bull. Soc. Ven.-Trent.*—Buletino della Società Veneto-Trentina di Scienze Naturali (Padua). (Also *Atti.*)
- Bull. Soc. Yonne*—Bulletin de la Société des Sciences Historiques et Naturelles de l'Yonne (Auxerre).
- Bull. Soc. Z. Fr.*—Bulletin de la Société Zoologique de France (Paris).
- Bull. U. S. Fish Comm.*—Bulletin of the United States Fish Commission (Washington).
- Bull. U. S. Geol. Surv.*—Bulletin of the United States Geological Survey (Washington).
- Bull. U. S. Nat. Mus.*—Bulletin of the United States National Museum (Washington). (Also *Proceedings.*)
- Bull. Washb. Coll.*—Bulletin of the Washburn Laboratory of Natural History (Topeka, Kansas).
- Canad. Ent.*—Canadian Entomologist (Saunders : Montreal).
- * *Canad. Nat.*—The Canadian Naturalist and Quarterly Journal of Science (Montreal).
- Can. Rec.*—Canadian Record of Science.
- Cardiff Nat. Soc.*—Cardiff Naturalists' Society. Report and Transactions (Cardiff).
- CB. Bakt. Parasit.*—Centralblatt für Bakteriologie und Parasitenkunde (Uhlhorn : Cassel).
- CB. Ges. Anthropol.*—Correspondenzblatt der deutschen Gesellschaft für Anthropologie, &c. (Brunswick).
- CB. Iris*—Correspondenz-Blatt des entomologischen Vereins Iris zu Dresden.
- CB. med. Wiss.*—Centralblatt für die medicinischen Wissenschaften (Berlin).

- CB. Ver. Regensb.*—(Now *Ber.*)
- CB. Ver. Rheinl.*—Correspondenz-Blatt des naturhistorischen Vereins der preussischen Rheinlande und Westphalens (Bonn). (Also *Verh. & SB.*)
- CB. Ver. Riga*—Correspondenzblatt des Naturforscher-Vereins zu Riga.
- Cellule*—La Cellule. Recueil de Cytologie et d'Histologie Générale (Carnoy, Gilson, & Denys : Lierre & Gand).
- Chrysanthemum*—The Chrysanthemum: a Monthly Magazine for Japan and the Far East (Yokohama).
- Circ. deutsch. Fisch. Ver.*—Circular des deutschen Fischerei-Vereins (Berlin).
- Cist. Ent.*—Cistula Entomologica (Janson : London).
- **Comm. Acc. Petersb.*—Commentarii Academiæ Scientiarum imperialis Petropolitane (St. Petersburg).
- Comm. Ateneo Brescia*—Commentari dell' Ateneo di Brescia.
- Conch. Mittheil.*—Conchologische Mittheilungen (Martens : Cassel).
- **Congr. Sc.*—Congrès Scientifique de France.
- Contr. E. M. Mus. Geol. Princeton*—Contributions from the E. M. Museum of Geology, Princeton College, U.S.A. (Scott & Osborn).
- C.R.*—Comptes rendus des Séances hebdomadaires de l'Académie des Sciences (Paris).
- C.R. Ass. Fr. Sci.*—Compte-rendu de l'Association Française pour l'avancement des Sciences.
- C.R. Ent. Belg.*—Comptes rendus des Séances de la Société Entomologique de Belgique (Brussels).
- C.R. Soc. Biol.*—Comptes rendus hebdomadaires des Séances et Mémoires de la Société de Biologie (Paris).
- C.R. Soc. L. Bord.*—Comptes Rendus de la Société Linnéenne de Bordeaux. (Also *Actes.*)
- Cron. cient.*—Cronica científica. Revista internacional de Ciencias (Rois y Torres : Barcelona).
- Dan. Selsk. Skr.*—K. Danske Videnskabernes Selskabs Skrifter (Copenhagen).
- Denk. Ak. Wien*—Denkschriften der k. Akademie der Wissenschaften zu Wien (Vienna). (Also *SB.*)
- Deutsche e. Z.*—Deutsche entomologische Zeitschrift (Kratz : Berlin).
- E. Mus. Lund.*—E museo Lundii En Samling Af Afhandlingar (Lütken : Kjøbenhavn).
- Ent.*—The Entomologist (London).
- Ent. Am.*—Entomologica Americana (Brooklyn).
- Ent. Gen.*—L'Entomologiste Genevois. Journal mensuel d'Entomologie pure et appliquée (Geneva).
- Ent. M. M.*—The Entomologist's Monthly Magazine (London).
- Ent. Med.*—Entomologiske Meddelelser udgivne af Entomologisk Forening ved Fr. Meinert Copenhagen.
- Ent. Nachr.*—Entomologische Nachrichten (Karsch : Berlin).

Ent. Tidskr.—Entomologisk Tidskrift, på föranstaltande af Entomologiska Föreningen i Stockholm (Spångberg : Stockholm).

Ertes. math. természett.—Ertesitő a matematikai és természettudományi ooztályok közlönye (Budapesth).

Ért. Term. Kör.—Értekezések a természettudományok köréből, Magyar tudományos Akadémia [Memoirs on Natural Science, Hungarian Academy of Sciences] (Budapesth).

Ess. Nat.—See *Tr. Ess. Club*.

Études d'Ent.—Études d'Entomologie, Faunes Entomologiques, Descriptions d'Insectes nouveaux ou peu connus (C. Oberthür : Rennes).

Evkön. Erd. Muz.—Evkönyvek erdélzi muzeumegylet (Kolozsvár = Klausenberg).

Fauna—Fauna. Comptes rendus des Sciences de la Société de Naturalistes Luxembourgeois.

Feuill. Nat.—Feuille des Jeunes Naturalistes (Dollfus : Paris).

Field—The Field (London).

For. & Str.—Forest and Stream.

Forh. Selsk. Chr.—Forhandlingar i Videnskabs-Selskabet i Christiania.

Förh. Sk. Naturf.—Förhandlingar vid de Skandinaviska Naturforskarnes.

Gard. Chron.—The Gardener's Chronicle (London).

Garner—The Garner and Science Records' Journal (Ramsay : Waltham).

Gef. Welt—Die gefiederte Welt: Zeitschrift für Vogelliebhaber, -zuechter und -händler (Russ : Berlin).

Geogr. JB.—Geographisches Jahrbuch (Gotha).

Geogr. MT.—Mitteilungen aus Justus Perthes' geographischer Anstalt (Gotha).

Geol. Mag.—Geological Magazine (Woodward : London).

Giorn. Sci. Palerm.—Giornale di Scienze Naturali ed Economiche di Palermo.

Göteborgs Handl.—Göteborgs kongl. Vetenskaps och Vitterhets samhälles Handlingar.

Helios—See *Mon. MT. Ver. Naturw. Frankfurt-a-O.*

Hist. Berwick Nat. Club—History of the Berwickshire Naturalists' Club (Alnwick).

Hor. Ent. Ross.—Horæ Societatis Entomologicæ Rossicæ (St. Petersburg).

Humboldt—Humboldt: Monatsschrift für die gesammten Naturwissenschaften (Stuttgart).

Ibis—The Ibis (Selater : London).

**Ind. Ann.*—The Indian Annals and Magazine of Natural Sciences (An Illustrated Monthly) (Murray : Bombay & London).

Ind. Mus. Notes—Indian Museum Notes (Calcutta).

Ins. Life—Insect Life (Washington).

Int. J. Micr.—The International Journal of Microscopy & Natural Science (Allen & Spiers : London & New York).

Isvest. Mosc. Univ.—Isvestiya imperatorskova obshchestva lyubitelei Estestvoznaukiya, Antropologi i Etnografii Sostoyashova, pre Moskovskom Universitet.

J. Ac. Philad.—Journal of the Academy of Natural Sciences of Philadelphia.

J. Agric. Soc. India—Journal of the Agricultural and Horticultural Society of India (Calcutta).

J. Anat. Phys.—Journal of Anatomy and Physiology (London).

J. A. S. B.—Journal of the Asiatic Society of Bengal (Calcutta).

J. A. S. (Bombay)—Journal of the Bombay Branch of the Royal Asiatic Society.

J. A. S. (Ceylon)—Journal of the Ceylon Branch of the Royal Asiatic Society.

J. A. S. (China)—Journal of the China Branch of the Royal Asiatic Society.

J. A. S. (Straits)—Journal of the Straits Branch of the Royal Asiatic Society (Singapore).

JB. Ak. Amst.—Jaarboek van de k. Akademie van Wetenschappen (Amsterdam). (Also *Verhandl.*)

JB. Mijnwezen—Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië (Amsterdam).

JB. geol. Reichsanst.—Jahrbuch der k.-k. geologischen Reichsanstalt (Vienna). (Also *Verhandl.*)

JB. Hamb.—Jahrbuch der Hamburgischen wissenschaftlichen Anstalten.

JB. Karpath. Ver.—Jahrbuch des Ungarischen Karpathen-Vereins (Kèsmark).

JB. k. Akad. Erfurt—Jahrbücher der königlichen Akademie gemeinnütziger Wissenschaften zu Erfurt.

JB. k. preuss. geol. Landesanst.—Jahrbuch der königlich preussischen geologischen Landesanstalt und Bergakademie zu Berlin.

JB. mal. Ges.—Jahrbuch der deutschen malakozoologischen Gesellschaft (Kobelt : Frankfurt).

JB. Mineral.—Neues Jahrbuch für Mineralogie, Geologie, und Palæontologie (Leonard & Geinitz : Leipzig).

JB. Mijnwezen Nederl. Indie—Jaarboek van het Mijnwezen van Nederl. Oost-Indie (Amsterdam).

JB. Mus. Kärnt.—Jahrbuch des naturhistorischen Landesmuseums von Kärnthen (Klagenfurt).

JB. nass. Ver.—Jahrbuch des nassauischen Vereins für Naturkunde (Wiesbaden).

JB. nat. Ges. Nürnberg (? continuation of *Abhandl.*).

JB. Sieb. Karpath. Ver.—Jahrbuch des Siebenbürgischen Karpathen-Vereins (Hermannstadt).

JB. Tharand. Ges.—Jahrbuch der Tharanden forstlichen Gesellschaft (Dresden).

J. Ber. Annab. Ver.—Jahresbericht des Annaberg-Buchholzer Vereins für Naturkunde (Annaberg).

J. Ber. Ges. Graub.—Jahresbericht der naturforschenden Gesellschaft Graubündens (Chur).

- J. Ber. Ges. Hannov.*—Jahresbericht der naturforschenden Gesellschaft in Hannover.
- J. Ber. k. Böhm. Ges. Wiss.*—Jahresbericht der königlich Böhmisches Gesellschaft der Wissenschaften.
- J. Ber. Laurent. Arnsberg*—Jahresbericht über das königlichen Laurentianum in Arnsberg.
- J. Ber. Pollichia*—Jahresbericht der Pollichia eines naturwissenschaftlichen Vereins der Rheinpfalz (Dürkheim a. d. Hart).
- J. Ber. Schles. Ges.*—Jahresbericht der Schlesischen Gesellschaft für vaterländische Cultur (Breslau). (Also *Abhandl.*)
- J. Ber. Schleswig. Ges.*—Jahresbericht der naturwissenschaftlichen Gesellschaft in Schleswig.
- J. Ber. Ver. Braunsch.*—Jahresbericht des Vereins für Naturwissenschaft zu Braunschweig (Brunswick).
- J. Ber. Ver. Elsass-Lothr.*—Jahresbericht des naturwissenschaftlichen Vereins von Elsass-Lothringen (Barr).
- J. Ber. Ver. Frankfurt*—Jahresbericht des physikalischen Vereins zu Frankfurt-am-Main.
- J. Ber. Ver. Magdeburg*—Jahresbericht und Abhandlungen des naturwissenschaftlichen Vereins in Magdeburg.
- J. Ber. Ver. Osnabr.*—Jahresbericht des naturwissenschaftlichen Vereins zu Osnabrück.
- J. Ber. Ver. Zwickau*—Jahresbericht des Vereins für Naturkunde zu Zwickau.
- J. Ber. Westf. Ver.*—Jahresbericht der zoologischen Sektion des Westfälischen provincial-Vereins für Wissenschaft und Kunst (Münster).
- J. Ber. Wetter. Ges.*—Jahresbericht der Wetterauischen Gesellschaft für die gesammte Naturkunde (Hanau).
- J. Ber. Württemb. Ver. Handelsgeogr.*—Jahresbericht des Württembergischen Vereins für Handelsgeographie (Stuttgart).
- J. Bomb. N. H. Soc.*—The Journal of the Bombay Natural History Society (Phipson : Bombay).
- J. Brit. Dent. Ass.*—Journal of the British Dental Association (London).
- J. Cincinn. Soc.*—Journal of the Cincinnati Society of Natural History.
- J. Coll. Sci. Japan*—Journal of the College of Science, Imperial University, Japan (Tōkyō).
- J. Comp. Med.*—Journal of Comparative Medicine and Surgery (Conklin & Porter : New York).
- J. de Conch.*—Journal de Conchyliologie (Crosse & Fischer : Paris).
- J. de l'Anat. Phys.*—Journal de l'Anatomie et de la Physiologie (Pouchet : Paris).
- J. Elisha Mitchell Sci. Soc.*—Journal of the Elisha Mitchell Scientific Society (Raleigh, N.C.).
- Jen. Z. Nat.*—Jenaische Zeitschrift für Naturwissenschaft, herausgegeben von der medicinisch-naturwissenschaftlichen Gesellschaft zu Jena.
- J. f. O.*—Journal für Ornithologie (Cabanis : Leipzig).
- JH. Ver. Lüneb.*—Jahreshefte des naturwissenschaftlichen Vereins für das Fürstenthum Lüneburg.

- JH. Ver. Württ.*—Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg (Stuttgart).
- J. Inst. Jamaica*—Journal of the Institute of Jamaica (Kingston).
- J. L. S.*—Journal of the Linnean Society ; Zoology (London).
- J. Mar. Biol. Ass.*—Journal of the Marine Biological Association (London & Plymouth).
- J. Morph.*—Journal of Morphology (Whitman & Allis : Boston, U.S.A.).
- J. Microgr.*—Journal de Micrographie (Pellétan : Paris).
- J. Micr. & Nat. Sci.*—Journal of Microscopy and Natural Science. (The Journal of the Postal Microscopical Society. A. Allen : London & Bath.)
- J. New Jersey N. H. Soc.*—Journal of the New Jersey Natural History Society (Trenton). (Formerly *J. Trenton Soc.*)
- J. Northampt. Soc.*—Journal of the Northamptonshire Natural History Society and Field Club.
- J. N. Y. Micr. Soc.*—Journal of the New York Microscopical Society (New York).
- J. of Conch.*—Journal [formerly Quarterly Journal] of Conchology (London).
- Johns Hopk. Univ. Circ.*—Johns Hopkins University Circulars (Baltimore).
- J. Physiol.*—The Journal of Physiology (Foster et alii : Cambridge).
- J. Quek. Club*—Journal of the Quekett Microscopical Club (London).
- J. R. Agric. Soc.*—Journal of the Royal Agricultural Society (London).
- J. R. Asiat. Soc.*—Journal of the Royal Asiatic Society (London).
- J. R. Inst. Cornwall*—Journal of the Royal Institution of Cornwall (Truro).
- J. R. Micr. Soc.*—Journal of the Royal Microscopical Society (London).
- J. R. Geol. Soc. Ireland*—Journal of the Royal Geological Society of Ireland (London, Dublin, & Edinburgh).
- J. R. Soc. N. S. W.*—Journal and Proceedings of the Royal Society of New South Wales (Sydney).
- J. Sci. Lisb.*—Jornal de Sciencias, &c., da Academia de Lisboa (Lisbon).
- J. Soc. Arts*—Journal of the Society of Arts (London).
- J. Trenton Soc.*—Journal of the Trenton Natural History Society (Trenton, N.J.). (Now *J. New Jersey N. H. Soc.*)
- J. Tr. Vict. Inst.*—Journal of the Transactions of the Victoria Institute, or Philosophical Society of Great Britain (London).
- Jaarb. Univ. Leiden*—Jaarboek der Rijks-Universiteit te Leiden (Leiden).
- Kansas Nat.*—The Kansas City Naturalist (Kansas). (Formerly *The Hosier Naturalist*).
- **Kosmos*—Kosmos: Zeitschrift für einheitliche Weltanschauung auf Grund der Entwicklungslehre.
- Kosmos Lemberg*—Kosmos : Lemberg.
- L'Ab.*—L'Abeille (De-Marseul : Paris).
- La Nature*—La Nature, Revue des Sciences, &c. (Tissandier : Paris).

- Le Bot.*—Le Botaniste (Dangeard : Paris).
Le Nat.—Le Naturaliste (Deyrolle : Paris).
Leopoldina—Leopoldina: Ämtlichen Organ für der k. Leopold-Carol. deutsch. Acad.
Lewisham Ass.—Lewisham and Blackheath Scientific Association.
Lioar Man.—Yn Lioar Manninagh. Published quarterly, for The Isle of Man Natural History and Antiquarian Society (Kermode : Ramsey).
Lotos—Lotos, Jahrbuch für Naturwissenschaft im Auftrage des Vereines 'Lotos' (Prague).
Lunds Univ. Årsskrift.—Lunds Universitets Årsskrift. (Also *Act. Lund.*)
- Maandbl. Natuurw.*—Maandblad voor Naturwetenschappen (Amsterdam).
Madras Journ.—The Madras Journal of Literature and Science.
Mal. Bl.—Malakozoologische Blätter (Clessin : Cassel).
Math. Nat. Ber. Ung.—Mathematische und naturwissenschaftliche Berichte aus Ungarn. Mit Unterstützung der Ungarischen Akad. d. Wiss. und der K. Ungar. naturwiss. Ges. herausgegeben von Baron R. Eötvös, &c. (Fröhlich : Buda-Pest).
Math. naturw. Mitt.—Mathematisch-naturwissenschaftliche Mittheilungen Tübingen (ed. Böklen).
Math. term. Értes.—Mathematikai és természettudományi Értesítő (Gyula : Buda Pesth).
Math. term. köz.—Mathematikai és természettudományi közlemények (Buda-Pest).
Med. Nat.—The Mediterranean Naturalist (Cooke : Malta).
Med. World.—Medical World.
Med. Soc. Fenn.—Meddelanden af Societas pro Fauna et Flora Fennica (Helsingfors).
Mél. biol.—Mélanges biologiques tirés du Bulletin de l'Académie impériale des Sciences de St. Petersburg.
Mém. Ac. Amiens—Mémoires de l'Académie des Sciences, des Lettres, et des Arts d'Amiens (Amiens).
Mém. Ac. Aix—Mémoires de l'Académie des Sciences, Agriculture, Arts, et Belles-lettres d'Aix (Aix en Provence).
Mem. Ac. Barcel.—Memorias de la real Academia de Ciencias de Barcelona.
Mém. Ac. Belg.—Mémoires de l'Académie royale des Sciences, des Lettres, et des Beaux Arts de Belgique (Brussels). (Also *Bull.*)
Mem. Acc. Bologn.—Memorie della R. Accademia delle Scienze dell'Istituto di Bologna.
Mém. Ac. Caen—Mémoires de l'Académie nationale des Sciences, Arts, et Belles-Lettres de Caen. (Formerly *Bulletin.*)
Mém. Ac. Dijon—Mémoires de l'Académie des Sciences, Arts, et Belles-Lettres de Dijon.
Mém. Ac. Lyon—Mémoires de l'Académie des Sciences, Belles-Lettres et Arts de Lyon (Lyon).
Mem. Ac. Madrid—Memorias de la real Academia de Ciencias Exactas Físicas, y Naturales de Madrid (Madrid).

- Mém. Ac. Metz.*—Mémoires de l'Académie de Metz.
- Mem. Acc. Mod.*—Memorie delle R. Accademia di Scienze, Lettere, ed Arti in Modena.
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- Mem. Ist. Venet.*—Memorie del R. Istituto Veneto di Scienze, &c. (Venice).
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- Mém. Soc. Aube*—Mémoires de la Société académique d'Agriculture, des Sciences, Arts, et Belles-Lettres du département de l'Aube (Troyes & Paris).
- Mém. Soc. Biol.*—(See *C.R.*)
- Mém. Soc. Bord.*—Mémoires de la Société des Sciences Physiques et Naturelles de Bordeaux.
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- Mém. Soc. Ém. Doubs.*—Mémoires de la Société d'Émulation du Doubs (Besançon).
- Mém. Soc. Géol.*—Mémoires de la Société Géologique de France (Paris).
- Mém. Soc. Hainault*—Mémoires et publications de la Société des Sciences, des Arts, et des Lettres du Hainault (Mons).
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- Month. P. Am. Ent. Soc.*—Proceedings of the Monthly Meetings of the Entomological Section of the Academy of Natural Sciences, Philadelphia (issued with *Tr. Am. Ent. Soc.*).
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- MB. Akad. Berlin*—(See *SB.*, &c.)
- MT. anthrop. Ges. Wien*—Mittheilungen der anthropologischen Gesellschaft in Wien (Vienna).
- MT. Aargau. nat. Ges.*—Mittheilungen der Aargauischen naturforschenden Gesellschaft.
- MT. embr. Inst. Wien (n.s.)*—Mittheilungen aus dem embryologischen Institute der k. k. Universität in Wien. New series (Schenck : Vienna).
- MT. Ges. Bern*—Mittheilungen der naturforschenden Gesellschaft in Bern.
- MT. Ges. Ostasien's*—Mittheilungen der deutschen Gesellschaft für Natur- und Völkerkunde Ostasien's (Yokohama).
- MT. min. geol. Mus. Dresden*—Mittheilungen aus dem k. mineralogisch-geologischen und prähistorischen Museum in Dresden.
- MT. Münch. ent. Ver.*—Mittheilungen der Münchener entomologischen Vereins.
- MT. orn. Ver. Wien*—Mittheilungen des ornithologischen Vereins in Wien (Vienna).
- MT. Osterlande*—Mittheilungen aus dem Osterlande (Altenburg).
- MT. Schw. ent. Ges.*—Mittheilungen der Schweizerischen entomologischen Gesellschaft (Schaffhausen). (Also with French title.)
- MT. Thurgau. Ges.*—Mittheilungen der Thurgauischen naturforschenden Gesellschaft (Frauenfeld).
- MT. Ung. geol. Anst.*—Mittheilungen aus dem Jahrbuche der k. Ungarischen geologischen Anstalt (Buda-Pest).
- MT. Ver. Steierm.*—Mittheilungen des naturwissenschaftlichen Vereins für Steiermark (Graz).
- MT. Vorpomm.*—Mittheilungen aus dem naturwissenschaftlichen Vereine von Neu-Vorpommern und Rügen (Griefswald).
- MT. z. Stat. Neap.*—Mittheilungen aus der zoologischen Station in Neapel (Leipzig).
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- N. Acta Ac. L.-C. Nat. cur.*—*Nova Acta Academiae Cæs. Leopoldino-Carolinæ Germaniæ Naturæ curiosorum* (Leipzig). (Also *Verhandlungen der k. Leop. Carol. deutschen Acad. d. Naturf.*)

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- N. Arch. Mus.* — Nouvelles Archives du Muséum d'Histoire Naturelle (Paris).
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- N. Mém. Soc. Helv.*—Nouveaux Mémoires de la Société Helvétique des Sciences Naturelles (Lausanne).
- N. Mém. Soc. imp. Moscou*—Nouveaux Mémoires de la Société impériale des Naturalistes de Moscou.
- N. Saggi Acad. Padova*—Nuovi Saggi della R. Accademia di Scienze Lettere ed Arti in Padova.
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- Nachr. Ges. Götting.*—Nachrichten von der k. Gesellschaft der Wissenschaften und der Georg Auguste Universität zu Göttingen.
- Nachr. mal. Ges.*—Nachrichtsblatt der deutschen malakozologischen Gesellschaft (Frankfort).
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- Nat. Hist. J.*—The Natural History Journal and School Reporter (London and York).
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- Nat. Ver. Haarlem*—Natuurkundige Verhandelingen van de Hollandsche Maatschappig der Wetenschappen te Haarlem (Haarlem).
- Nat. Ver. Utrecht* — Natuurkundige Verhandelingen Provinciaal Utrechtsch genootschap van Kunsten en Wetenschappen (Utrecht).
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- Notizbl. Ver. Erdk. Darmstadt*—Notizblatt des Vereins für Erdkunde zu Darmstadt.
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- Nyt. Mag. Naturv.*—Nyt Magazin for Naturvidenskaberne (Danielssen et alii : Christiania).
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- Öfv. Finska Förh.*—Öfversigt af Finska Vetenskaps Societetens Förhandlingar (Helsingfors).
- Onderz. Phys. Lab. Utrecht*—Onderzoekingen gedaan en het physiologisch Laboratorium der Utrechtsche Hoogeschool.
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- Ornis*—Ornis : Internationale Zeitschrift für die gesammte Ornithologie (Blasius & Hayek : Vienna).
- Orvos-termesz. Értesítő.*—Orvos-termeszettudományi Értesítő (Kolozsvár = Klausenberg).
- Overs. Dan. Selsk.*—Oversigt over det k. Danske Videnskabernes Selskabs Forhandlingar (Copenhagen).
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- P. Am. Ac.*—Proceedings of the American Academy of Arts and Sciences (Boston). (Also *Mem.*)
- P. Am. Ass.*—Proceedings of the American Association for the Advancement of Science. (Also *Mem.*)
- P. Am. Micr. Soc.*—Proceedings of the American Society of Microscopists (Buffalo).
- P. Am. Phil. Soc.*—Proceedings of the American Philosophical Society, &c. (Philadelphia). (Also *Trans.*)
- P. A. S. B.*—Proceedings of the Asiatic Society of Bengal (Calcutta).
- P. Bath. N. H. Soc.*—Proceedings of the Bath Natural History and Antiquarian Field Club.
- P. Belf. Soc.*—(See *Report.*)
- P. Biol. Soc. Washington*—Proceedings of the Biological Society of Washington.
- P. Birmingh. Phil. Soc.*—Proceedings of the Birmingham Philosophical Society.
- P. Birmingh. Soc.*—(See *Report.*)
- P. Bost. Soc.*—Proceedings of the Boston Society of Natural History (Boston, U.S.A.) (Also *Mem.*)

- P. Bristol Soc.*—Proceedings of the Bristol Naturalists' Society.
- P. Cal. Ac. Sci.*—Proceedings of the Californian Academy of Sciences (San Francisco). (Also *Trans.* and *Occas. Papers.*)
- P. Cambr. Phil. Soc.*—Proceedings of the Philosophical Society, Cambridge. (Also *Trans.*)
- P. Canad. Inst.*—Proceedings of the Canadian Institute (Toronto).
- P. Chest. Soc.*—Proceedings of the Chester Society of Natural Science.
- P. Colorado Soc.*—Proceedings of the Colorado Scientific Society (Denver).
- P. Cottesw. Nat. F. C.*—Proceedings of the Cotteswold Naturalists' Field Club (Gloucester).
- P. Davenport Ac.*—Proceedings of the Davenport Academy of Natural Sciences (Davenport, Iowa).
- P. Dorset Field Club*—Proceedings of the Dorset Natural History and Antiquarian Field Club (Sherborne).
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- P. E. Soc. Wash.*—Proceedings of the Entomological Society of Washington.
- P. Folkestone Soc.*—Proceedings of the Folkestone Natural History Society.
- P. Geol. Ass.*—Proceedings of the Geologists' Association (London).
- P. Holmesdale Nat. Hist. Club*—Proceedings of the Holmesdale Natural History Club (London).
- P. Linn. Soc. N.S.W.*—Proceedings of the Linnean Society of New South Wales (Sydney).
- P. Liverp. Biol. Soc.*—Proceedings of the Liverpool Biological Society.
- P. Liverp. Field Club*—Proceedings of the Liverpool Naturalists' Field Club.
- P. Liverp. Soc.*—Proceedings of the Literary and Philosophical Society of Liverpool.
- P. Nebraska Ass.*—Proceedings of the Nebraska Association for the Advancement of Science.
- P. Newport Nat. Hist. Soc.*—Proceedings of the Newport Natural History Society.
- P. N. H. Soc. Glasg.*—Proceedings of the Natural History Society of Glasgow.
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- P. Rochester Acad.*—Proceedings of the Rochester Academy of Science (Rochester, N.Y.).
- P. R. Geogr. Soc.*—Proceedings of the Royal Geographical Society (London).
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- P. R. Soc.*—Proceedings of the Royal Society (London).

- P. R. Soc. Edinb.*—Proceedings of the Royal Society of Edinburgh. (Also *Trans.*)
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- P. Soc. Manch.*—(See *Mem.*)
- P. Somerset. Soc.*—Proceedings of the Somersetshire Archæological and Natural History Society. New series (Taunton).
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- Pam. Fizjogr.*—Pamiętnik Fizjograficzny (Warsaw).
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- Protok. obsch. estest. Kazan*—Protokolui zasiedaniï obshchestva estestvoispytatelei pri Imperatorskom Kazanskom Universitetye.
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**Rend. Ist. Bologn.*—Rendiconti delle sessioni della R. Accademia delle Scienze dell' Istituto di Bologna.
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- Rep. Austr. Ass.*—Reports of the Australasian Association for the Advancement of Science.
Rep. Austr. Zool. Soc.—Report of the South Australian Zoological and Acclimatization Society (Adelaide).
Rep. Belfast Field Club—Annual Report and Proceedings of the Belfast Naturalists' Field Club.
- *Rep. Birm. N. H. Soc.*—Report [and Transactions] of the Birmingham Natural History and Microscopical Society. (Now in *Mid. Nat.*)
Rep. Brighton Soc.—Annual Report and Abstract of Proceedings of the Brighton and Sussex Natural History Society (Brighton).
Rep. Brit. Ass.—Report of the British Association for the Advancement of Science.
Rep. Cornell Univ. Stat.—Report of the Department of Entomology of the Cornell University Experiment Station (Comstock : Ithaca, N.Y.).
Rep. Cornwall Polytechn.—Reports of the Royal Polytechnical Society of Cornwall.
- Rep. Dep. Agric. & Rep. Ent.*—Report of the Entomologist. From the Annual Report of the Department of Agriculture (Washington).
Rep. Dulwich Col. Soc.—Annual Report of the Dulwich College Science Society (Dulwich).
Rep. E. Soc. Ont.—Report of the Entomological Society of the Province of Ontario.
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- Rep. Marl. Coll. Soc.*—Report of the Marlborough College Natural History Society.
- Rep. N. Stafford F. Club*—Report of the North Stafford Field Club.
- Rep. N. Y. Mus.*—Annual Report of the New York State Museum of Natural History (Albany).
- Rep. & P. Belfast N. H. Soc.*—Report and Proceedings of the Belfast Natural History and Philosophical Society.
- Rep. Penzance Soc.*—Report and Transactions of the Penzance Natural History and Antiquarian Society.
- Rep. Plym. Inst.*—Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society (Plymouth).
- Rep. Rugby Soc.*—Report of the Rugby School Natural History Society.
- Rep. Tr. Devon Ass.*—Report and Transactions of the Devonshire Association for the Advancement of Science, &c. (Plymouth).
- Rep. U. S. Ent. Comm.*—Report of the United States Entomological Commission (Washington).
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- Rep. U. S. Geol. Surv.*—Annual Report of the United States Geological Survey (Washington).
- Rep. Wellington Soc.*—Report of the Wellington College Natural Science Society (Wellington Coll.).
- Rep. Winchester Soc.*—Report of the Winchester College Natural History Society (Winchester).
- Rep. W. Kent Soc.*—Papers and Reports, &c., of the West Kent Natural History, Microscopical, and Photographic Society (Greenwich).
- Rep. Yorks. Phil. Soc.*—Report of the Council of the Yorkshire Philosophical Society.
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- Rev. Biol.*—Revue biologique du Nord de la France (Barrois, Hallez, Moniez : Lille).
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- Rev. Cient. Univ. Venezuela*—Revista Científica mensual de la Universidad Central de Venezuela (Caracas).
- Rev. d'Ent.*—Revue d'Entomologie, publié par la Société Française d'Entomologie (Fauvel : Caen).
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- Rev. Quest. Sci.*—Revue des Questions Scientifiques publiée par la Société scientifique de Bruxelles (Brussels).
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- Rev. Soc. Porto*—Revista da Societa de Instrucção de Porto (Oporto).
- Rev. Tierheilkunde*—Revue für Tierheilkunde und Tierzucht (Vienna).
- Rev. Tr. Sci.*—Revue des Travaux Scientifiques (Paris).
- Rev. Zool.*—Revue Zoologique.
- Riv. Ital. Sci. Nat.*—Rivista italiana di Scienze Naturali e Bollettino del Naturalista Collettore, Allevatore, Coltivatore (Brogi : Siena).
- Rochester Nat.*—The Rochester Naturalist (Rochester).
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- Samm. naturw. Vorträge*—Sammlung naturwissenschaftlicher Vorträge (Huth : Berlin.)
- SB. Ak. Berlin*—Sitzungsberichte der königlich Preussischen Akademie der Wissenschaften zu Berlin (formerly Bericht and Monatsbericht). (Also *Abhandl.*)
- SB. Ak. Wien*—Sitzungsberichte der mathematische-naturwissenschaftlichen Classe der k. Akademie der Wissenschaften (Vienna). (Also *Denkschriften.*)
- SB. Bayer. Ak.*—Sitzungsberichte der mathematisch-physikalischen Classe der k. Bayerischen Akademie der Wissenschaften (Munich). (Also *Abhandl.*)
- SB. Böhm. Ges.*—Sitzungsberichte der k. Böhmischen Gesellschaft der Wissenschaften (Prague). (Also *Abhandl.*)
- SB. Ges. Dorp.*—Sitzungsberichte der Naturforscher-Gesellschaft bei der Universität Dorpat (Dragendorff : Dorpat). (Also *Schriften.*)
- SB. Ges. Isis*—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' (Dresden). (Also *Abhandl.*)
- SB. Ges. Königsb.*—Sitzungsberichte der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg). (See *Schr. Ges. Königsb.*)
- SB. Ges. Leipzig*—Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig.
- SB. Ges. Marb.*—Sitzungsberichte der Gesellschaft zur Beförderung der gesamten Naturwissenschaften zu Marburg.
- SB. Ges. Morph.*—Sitzungsberichte der Gesellschaft für Morphologie und Physiologie in München (Munich).
- SB. Ges. Würzb.*—Sitzungsberichte des physikalisch-medicinischen Gesellschaft zu Würzburg. (Also *Verh.*)

- SB. Jen. Ges.*—Sitzungsberichte der Jenaischen Gesellschaft für Medicin und Naturwissenschaft (Jena).
- SB. nat. Fr.*—Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin.
- SB. niederrhein. Ges.*—Sitzungsberichte der niederrheinischen Gesellschaft für Natur- und Heilkunde (Bonn). (Published with *Verh. & CB. Ver. Rheint.*)
- SB. Soc. Erlangen*—Sitzungsberichte der physikalisch-medicinischen Societät zu Erlangen.
- SB. z.-b. Wien*—Sitzungsberichte der zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *Verh.*)
- Schr. Ges. Danz.*—Neueste Schriften der naturforschenden Gesellschaft zu Danzig.
- Schr. Ges. Königsb.*—Schriften der physikalisch-ökonomischen Gesellschaft zu Königsberg in Preussen.
- Schr. gesamt. Naturw. Marburg*—Schriften der Gesellschaft zur Beförderung der gesamten Naturwissenschaften zu Marburg.
- Schr. Nat. ges. Dorpat.*—Schriften herausgegeben von der Naturforscher-Gesellschaft bei der Universität Dorpat. (Also *SB.*)
- Schr. Nat. Ver. Schleswig*—Schriften des naturwissenschaftlichen Vereins für Schleswig-Holstein (Kiel).
- Schr. Ver. Harzes*—Schriften des naturwissenschaftlichen Vereins des Harzes in Wernigerode.
- Schr. Univ. Kiel*—Schriften der Universität zu Kiel.
- Science*—Science (Dall : Cambridge, Mass.).
- Sci. Goss.*—Science Gossip (Taylor : London).
- Sci. Mem.*—Scientific Memoirs by Medical Officers of the Army of India (Simpson : Calcutta).
- Science Obs.*—Science Observer (Boston Scientific Society, U.S.A.).
- Sci. P. R. Dubl. Soc.*—Scientific Proceedings of the Royal Dublin Society.
- Sci. Tr. R. Dublin Soc. (2)*—The Scientific Transactions of the Royal Dublin Society. Second Series.
- Scot. Nat.*—The Scottish Naturalist (Clarke : Perth).
- Sem. Médic.*—La Semaine Médicale.
- Smiths. Contrib. Knowledge*—Smithsonian Contributions to Knowledge (Washington).
- Smiths. Misc. Coll.*—Smithsonian Miscellaneous Collections (Washington).
- Smiths. Report*—Annual Report of the Board of Regents of the Smithsonian Institution, &c. (Washington).
- Soc. Ent.*—Societas Entomologica.
- Soc. Agricole Pyrén.-orient.*—Société Agricole Scientifique et Littéraire des Pyrénées-orientales (Perpignan).
- Soc. Sci. Vitry*—Société des Sciences et Arts de Vitry la François (Arcis sur Aube).
- Sprawozd. Kom. fizyogr.*—Sprawozdanie Komisji fizyograficznej, &c. (Cracow).
- Stavanger Mus.*—Stavanger Museums Aarsberetning.
- Stud. Biol. Lab. J. Hopkins Univ.*—Studies at the Biological Laboratory of the Johns Hopkins University (Baltimore).

- *Stud. Micr. Sci.*—Studies in Microscopical Science (Cole : London).
Stud. Mus. Dundee—Studies from the Museum of Zoology in University College, Dundee (D'Arcy Thompson : Dundee).
Sv. Ak. Handl.—K. Svenska Vetenskaps-Akademien's Handlingar (Stockholm).
Tag. Deut. Nat. Vers.—Tageblatt der Versammlung deutscher Naturforscher und Aertzte.
Taprobanian—The Taprobanian (Nevill : Bombay).
Tijdschr. Ent.—Tijdschrift voor Entomologie (The Hague).
Tijdschr. Ind. Volkenkund—Tijdschrift voor Indische Taal-, Land- en Volkenkunde, etc. (Brandes & Abendann, Batavia and the Hague).
Tijdschr. Nederl. Dierk. Ver. (2)—Tijdschrift van de Nederlandsche Dierkundige Vereeniging (Leyden).
Tijdschr. Nederl. Ind.—Naturkundig Tijdschrift voor Nederlandsch Indië (Batavia).
Timehri—Timehri : being the Journal of the Royal Agricultural and Commercial Society of British Guiana (Quelch : Demerara).
Termes Közlöny—Természettudományi Közlöny kiadja a k. magyar termeszett. Társulat (Budapest).
Term. füzetek—Természettudományi füzetek : kiadja a magyar remzeti Múzeum (Journal of Zoology, &c., edited by Hungarian Museum at Budapest).
Tr. Albany Inst.—Transactions of the Albany Institute. (Formerly *Proceedings* also).
Tr. Am. Phil. Soc.—Transactions of the American Philosophical Society, &c. (Philadelphia). (Also *Proceedings*).
Tr. Am. Ent. Soc.—Transactions of the American Entomological Society (Philadelphia).
Tr. A. S. Japan—Transactions of the Asiatic Society of Japan (Yokohama).
Tr. Barrow Nat. Field Club—Transactions of the Barrow Naturalists Field Club.
Tr. Camb. Phil. Soc.—Transactions of the Cambridge Philosophical Society. (Also *Proceedings*).
Tr. Cardiff Nat. Soc.—(See *Rep. Tr. Cardiff Nat. Soc.*)
Tr. Conn. Ac.—Transactions of the Connecticut Academy of Sciences (New Haven).
Tr. Cumberl. Westmorl. Ass.—Transactions of the Cumberland and Westmoreland Association for the Advancement of Literature and Science (Goodchild : Carlisle).
Tr. Devon Ass.—(See *Rep. Tr. Devon Ass.*)
Tr. Dumfries Nat. Hist. Soc.—The Transactions and Journal of Proceedings of the Dumfries and Galloway Natural History and Antiquarian Society (Dumfries).
Tr. Edin. Geol. Soc.—Transactions of the Edinburgh Geological Society.
Tr. Edinb. Nat. Soc.—Transactions of the Edinburgh Field Naturalists' and Microscopical Society.

- Tr. Ess. Club* = *Ess. Nat.*—Essex Naturalist: being the Journal, Transactions, and Proceedings of the Essex Field Club (Buckhurst Hill).
- Tr. E. Kent Nat. Hist. Soc.*—Transactions of the East Kent Natural History Society (Canterbury).
- Tr. E. Soc.*—Transactions of the Entomological Society of London.
- **Tr. Geol. Soc.*—Transactions of the Geological Society of London.
- Tr. Hertf. Soc.*—Transactions of the Hertfordshire Natural History Society and Field Club (Watford).
- Tr. Kansas Ac.*—Transactions of the Kansas Academy of Science (Topeka).
- Tr. Leicester Soc.*—Transactions of the Leicester Literary and Philosophical Society (Leicester).
- Tr. L. S.*—Transactions of the Linnean Society, London. (Also *Journal*.)
- Tr. L. S. New York*—Transactions of the Linnean Society of New York.
- Tr. Leeds Nat. Club*—Transactions of the Leeds Naturalists' Club.
- Tr. Manch. Geol. Soc.*—Transactions of the Manchester Geological Society.
- Tr. Manch. Micr. Soc.*—Transactions of the Manchester Microscopical Society.
- Tr. Maryland Ac. Sci.*—Transactions of the Maryland Academy of Sciences.
- Tr. Middlesex Soc.*—Transactions of the Middlesex Natural History and Science Society.
- Tr. Newbury Club*—Transactions of the Newbury District Field Club.
- Tr. Norw. Soc.*—Transactions of the Norfolk and Norwich Naturalists' Society (Norwich).
- Tr. Notts. Soc.*—Transactions of the Nottingham Naturalists' Society.
- Tr. N. York Ac. Sci.*—Transactions of the New York Academy of Sciences (New York). (Also *Annals*.)
- Tr. N. Z. Inst.*—Transactions and Proceedings of the New Zealand Institute (Wellington).
- Tr. Odont. Soc.*—Transactions of the Odontological Society.
- Tr. Ottawa Nat. Club*—Transactions of the Ottawa Field-Naturalists' Club.
- Tr. & P. Perthsh. Soc.*—Transactions and Proceedings of the Perthshire Society of Natural Science (Perth).
- Tr. R. Irish Ac.*—Transactions of the Royal Irish Academy (Dublin).
- Tr. S. African Phil. Soc.*—Transactions of the South African Philosophical Society (Cape Town).
- Tr. R. Soc. Canada*—Proceedings and Transactions of the Royal Society of Canada (Montreal).
- Tr. R. Soc. Edinb.*—Transactions of the Royal Society of Edinburgh.
- Tr. R. Soc. S. Austr.*—Transactions of the Royal Society of South Australia (Adelaide).
- Tr. R. Soc. Vict.*—Transactions of the Royal Society of Victoria. (Also *Proceedings*.)
- Tr. Shropshire Soc.*—Transactions of the Shropshire Archæological and Natural History Society (Shrewsbury and Oswestry).
- Tr. Soc. roy. Maur.*—Transactions de la Société royale des Arts et des Sciences de Maurice (Mauritius). (Title formerly in English.)

- Tr. Stirling Soc.*—Transactions of the Stirling Natural History and Archæological Society.
- Tr. St. Louis Acad.*—Transactions of the Academy of Science of St. Louis.
- **Tr. Tyneside Club*—Transactions of the Tyneside Naturalists' Field Club (Newcastle-upon-Tyne).
- Tr. Wagner Inst.*—Transactions of the Wagner Free Institute of Science of Philadelphia.
- Tr. Wisconsin Acad.*—Transactions of the Wisconsin Academy of Sciences, Arts, and Letters (Madison). (Also *Bulletin*.)
- Tr. Woolhope Nat.*—Transactions of the Woolhope Naturalists' Field Club (Hereford).
- Tr. Yorksh. Union*—Transactions of the Yorkshire Naturalists' Union (London & Leeds).
- Tr. Z. S.*—Transactions of the Zoological Society (London).
- Trav. Ac. Reims*—Travaux de l'Académie nationale de Reims.
- Trav. Inst. Zool. Lille*—Travaux de l'Institut Zoologique de Lille et de la Station maritime de Wimereux (Lille).
- Trav. Lab. Histol.*—Travaux du Laboratoire d'Histologie du Collège de France, École pratique des Hautes Études (Ranvier : Paris).
- Trav. Soc. Univ. Kharkow*—Travaux de la Société des Naturalistes à l'Université impériale de Kharkow.
- Trencsén term. egy.*—Trencsén megyei természettudományi egysület (Trencsin).
- Tromsø Mus. Aarsh.*—Tromsø Museum's Aarshefter.
- Trudui Kazan. Univ.*—Trudui obshchestva estestvoispuitatelei pri imperatorskom Kazanskom Universitetzi.
- Trudui Kharkoff Univ.*—Trudui obshtchestva ispytatelei prihody pro imp. Kharkovskom universitet (Kharkoff).
- Trudui Russ. Est.*—Trudui sezda russkich estestvoespytatelei.
- Trudui St. Petersburg Est.*—Trudui sanct Petersburgskagho obshchestva estestvoispuitatelei. (Called also Travaux de la Société des Naturalistes de St. Petersburg.)
- Uebers. Arb. Schles. Ges. Breslau*—Uebersicht der Arbeiten und Verhandlungen des Schlesischen naturwissenschaftlichen Gesellschaft in Breslau.
- Unters. Nat.*—Untersuchungen zur Naturlehre des Menschen und der Thiere (Moleschott : Giessen).
- Upsala Univ. Årsskrift*—Upsala Universitets Årsskrift (Upsala). (Also *Act. Upsala*.)
- Vannin Lioar.*—(See *Lioar Man*.)
- Verh. Ak. Amst.*—Verhandelingen der koninklijke Akademie van Wetenschappen (Amsterdam). (Also *JB*.)
- Verh. anthrop. Ges.*—Verhandlungen der Berliner anthropologischen Gesellschaft (Berlin).
- Verh. Batav. Genoots.*—Verhandelingen van het Bataviaasch Genootschap van Kunsten en wetenschappen (Batavia and The Hague).

- Verh. geol. Reichsanst.*—Verhandlungen der k.-k. geologischen Reichsanstalt (Vienna). (Also *JB.*)
- Verh. Ges. Basel*—Verhandlungen der naturforschenden Gesellschaft in Basel (Bâle).
- Verh. Ges. Würzb.*—Verhandlungen der physikalisch-medicinischen Gesellschaft zu Würzburg. (Also *SB.*)
- Verh. k. Leopold. Carol. Akad. Naturf.*—(See *N. Act. Ac. Leop. Carol. Nat. cur.*)
- Verh. naturw. Ver. Karlsruhe*—Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe.
- Verh. schweiz. Naturf. Ges.*—(See *Act. Soc. Helv.*)
- Verh. Siebenb. Ver.*—Verhandlungen und Mittheilungen des Siebenbürgischen Vereins für Naturwissenschaften (Hermannstadt).
- Verh. Ver. Brünn.*—Verhandlungen des naturforschenden Vereins in Brünn.
- Verh. Ver. Hamb.*—Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg.
- Verh. Ver. Heidelb.*—Verhandlungen des naturhistorisch-medicinischen Vereins zu Heidelberg.
- Verh. Ver. Presburg*—Verhandlungen des Vereins für Natur- und Heilkunde zu Presburg.
- Verh. Ver. Rheint.*—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westphalen (Bonn). (Also *CB.*)
- Verh. z.-b. Wien*—Verhandlungen der kaiserlichen-königlichen zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *SB.*)
- Versl. Ak. Amst.*—Verslagen en Mededeelingen der k. Akademie van Wetenschappen (Amsterdam).
- Verh. d. Ver. Santiago*—Verhandlungen des Deutschen wissenschaftlichen Vereines zu Santiago (Santiago, Chili).
- Vict. Nat.*—Victorian Naturalist, The Journal and Magazine of the Field Naturalists' Club of Victoria (Melbourne).
- Vid. Medd.*—Videnskabelige Meddelelser fra den naturhistoriske Forening (Copenhagen).
- Viert. Ges. Zürich*—Vierteljahrschrift der naturforschenden Gesellschaft in Zürich (Wolf : Zürich).
- Wesley Nat.*—The Wesley Naturalist. Monthly Journal of the Wesley Scientific Society (Dallinger et alii : London).
- West Am. Scientist*—The West American Scientist (San Diego).
- Wiedomosci z nauk przyrod.* = Materialien zu dem Wissenschaften (Warsaw).
- Wien. ent. Z.*—Wiener entomologische Zeitung (Vienna).
- Wilt. Mag.*—The Wiltshire Archæological and Natural History Magazine (Devizes).
- York. Phil. Soc.*—Yorkshire Philosophical Society Annual Report (York).
- Young Nat.*—The Young Naturalist (Morley : Huddersfield).
- Z. Biol.*—Zeitschrift für Biologie (München).
- Z. Ent. Bresl.*—Zeitschrift für Entomologie (Breslau).

- Z. Ferdinand. Tirol Vorarlberg*.—Zeitschrift des Ferdinandeums für Tirol und Vorarlberg (Innsbrück).
- Z. f. Ethnol.*.—Zeitschrift für Ethnologie (Bastian & Hartmann : Berlin).
- Z. f. Thiermed.*.—Zeitschrift für Thiermedizin und vergleichende Pathologie).
- Z. geol. Ges.*.—Zeitschrift der deutschen geologischen Gesellschaft (Berlin).
- Z. ges. Orn.*.—Zeitschrift für die gesammte Ornithologie (Von Madarász : Budapest).
- Z. Naturw.*.—Zeitschrift für Naturwissenschaften. Original Abhandlungen und Berichte herausgegeben im Auftrago der naturwissenschaftlichen Vereins für Sachsen und Thüringen (Brass : Halle-a-S.).
- Z. Orn.*.—Zeitschrift für Ornithologie und praktischen Geflug.
- Z. wiss. Geogr.*.—Zeitschrift für wissenschaftliche Geographie (Kettler : Lahr, in Baden).
- Z. wiss. Mikr.*.—Zeitschrift für wissenschaftliche Mikroskopie und für mikroskopische Technik (Berens : Braunschweig).
- Z. wiss. Zool.*.—Zeitschrift für wissenschaftliche Zoologie (Kölliker & Ehlers : Leipzig).
- Zapiski Kiev.*.—Zapiski Kievskagho Obshchestva Estestvoispuitatelei (Kieff).
- Zapiski Novoross. Obsch. Estestv.*.—Zapiski Novorossiskagho Obshchestva Estestvoispuitatelei (Odessa).
- Zoe*.—Zoe : A Biological Journal (San Francisco).
- Zool.*.—The Zoologist (Harting : London).
- Zool. Anz.*.—Zoologischer Anzeiger (Carus : Leipzig).
- Zool. Beitr.*.—Zoologische Beiträge (Breslau).
- Zool. Gart.*.—Der Zoologische Garten (Noll : Frankfort).
- Zool. Jahrb.*.—Zoologische Jahrbücher (Spengel : Giessen).
- Zool. JB.*.—Zoologischer Jahresbericht (Mayer & Giesbrecht : Berlin).
- Zool. Mag.*.—The Zoological Magazine (Tokyo).
- Zool. Rec.*.—The Zoological Record (Beddard : London).

An asterisk prefixed to a quotation signifies that the Recorder has not seen the journal or work referred to.

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ZOOLOGICAL RECORD

FOR 1890.

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BY

J. ARTHUR THOMSON, M.A., F.R.S.E.

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*BATEMAN, G. C. Fresh-Water Aquaria, their Construction, Arrangement, and Management. London : 8vo, 316 pp., figs.

*BOITARD & MAIGNE. Nouveau Manuel complet du Naturaliste Préparateur. Partie II. Taxidermie, par Boitard. Nouvelle édition, entièrement refondue et complétée par Magne. Paris : 12mo, 12 & 420 pp., illustr.

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VON MARENZELLER, E. Der moderne Apparat zur Erforschung der Meerestiefen. Verh. z.-b. Wien, xl, pp. 207-226, 10 figs.

*MARKTANNER-TURNERETSCHER, G. Die Mikrophotographie als Hilfsmittel naturwissenschaftlicher Forschung. Halle : 8vo, 7 & 344 pp., 2 pls., & 195 figs.

PERRIER, E. De l'Emploi de l'Eau de Mer artificielle pour la Conservation des Animaux Marins, et en particulier des Huîtres, dans des grands Aquariums. C.R. cx, pp. 1076-1079.

*RITZEMA-BOS, J. Thierische Schädlinge und Nützlinge für Ackerbau, Viehzucht, Wald- und Gartenbau ; Lebensformen, Vorkommen, Einfluss und die Massregeln zu Vertilgung und Schutz. Praktisches Handbuch. Berlin : 8vo, xvi & 876 pp., 477 figs.

(B.) THEORY OF EVOLUTION.

(1.) *General.*

BARON, R. Variétés Zootechniques: La Loi de Delbœuf. Bull. Sci. Fr. Belg. xxii, pp. 123-137.

The law is stated as follows :—"Du moment qu'une cause constante fait varier un type, dans une proportion aussi faible que l'on voudra, les variations finissent par lui disputer victorieusement la place."

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P. Z. S. lxxviii, pp. 579-588, 4 figs.

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*BERNSTEIN, J. Die mechanistische Theorie des Lebens, ihre Grundlagen und Erfolge. Braunschweig: 8vo, 26 pp.

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*BLANCHARD, F. The Condition of Variation. Am. Micr. J. xi, pp. 135 & 136.

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COPE, E. D. The Evolution of Mind. Am. Nat. xxiv, pp. 899-913 & 1000-1016.

CROLL, J. The Philosophical Basis of Evolution. London: 8vo, pp. viii & 204.

CUNNINGHAM, J. T. [See EIMER, G. H. T.]

DARESTE, —. Nouvelles recherches sur le Mode de Formation des Monstres omphalocéphales et sur la Dualité primitive du Cœur dans les Embryons de l'embranchement des Vertébrés. *C.R.* cx, pp. 1142-1144.

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*DREYER, F. Die Theorie der Biokrystallisation im Allgemeinen und die Skelettbildung der Polycystinen im Besonderen. Jena: 8vo, 40 pp.

EIMER, G. H. T. Organic Evolution as the Result of the Inheritance of Acquired Characters according to the Laws of Organic Growth. (Translation by J. T. CUNNINGHAM.) London: 8vo, xxviii & 435, pp. 4 figs.

FINN, F. [See TITCHENER.]

GADOW, HS. Description of the Modifications of certain Organs which seem to be Illustrations of the Inheritance of Acquired Characters in Mammals and Birds. *Zool. Jahrb.* v, pp. 629-646, 2 pls.

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GIARD, A. Le principe de Lamarck et l'Hérédité des Modifications somatiques. *Rev. Sci.* xlvi, pp. 705-713.

*GULDBERG, G. Om Darwinismen og dens Rækkevidde. Christiania: 8vo, iv & 128 pp.

GULICK, J. T. Intensive Segregation, or Divergence through Independent Transformation. *J. L. Soc.* xxiii, pp. 312-380.

Segregation, that at first divides the species into sections with reference to some one endowment, is always tending to intensified segregation, in which the sections present differences in regard to an increasing number of endowments. Persistent differences are not all adaptational, for some have no relation to utility. Adaptational differences are not all advantageous. But no divergence can be maintained without the prevention of interbreeding.

—. Divergent Evolution and the Darwinian Theory. *Am. J. Sci.* 1890, pp. 21-30; *Ann. N. H.* v, pp. 156-166.

Segregation a necessary condition for the production of divergent species and races. The relation of Darwin's conclusions to this theory.

[GULICK, J. T.] The Inconsistencies of Utilitarianism as the exclusive Theory of Organic Evolution. *Am. J. Sci.* xl, pp. 1-14; *Ann. N. H.* vi, pp. 125-139.

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[*Cf.* HAACKE, W. Ueber die systematische und morphologische Bedeutung bisher unbeachtet gebliebener Borsten am Säugetierkopfe. *T. c.* pp. 175-184.]

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*LENDENFELD, R. v. Wie entstehen neue Arten von Thieren und Pflanzen? *Zool. Gart.* xxxi, pp. 321-330.

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*MCNEILL, J. The Male Element the Originating Factor in the Development of Species. Psyche, v, pp. 269-272.

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MORGAN, C. LLOYD. [See General.]

— The Nature and Origin of Variations. Presidential Address. Rep. Proc. Bristol Soc. vi (1890-91), pp. 1-25.

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PACKARD, A. S. Hints on the Evolution of the bristles, spines, and tubercles of certain Caterpillars, apparently resulting from a change from low-feeding to arboreal habits; illustrated by the life-histories of some Notodontians. P. Bost. Soc. xxiv, pp. 482-560, 2 pls., & 2 figs.

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*PASCOE, F. P. The Darwinian Theory of the Origin of Species. London: 8vo, 130 pp.

*POTONIÉ, H. Aufzählung von Gelehrten, die in der Zeit von Lamarch bis Darwin sich im Sinne der Descendenz-Theorie geäußert haben. Nat. Wochenschr. v, pp. 441-445.

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*RENOOZ, C. La Nouvelle Science. Livre 3. L'Évolution de l'Homme et des Animaux. 1 Partie. Les Mammifères. Paris : 8vo, 261 pp.

*REYBURN, R. The Life-history of Micro-organisms, with its relation to the Theory of Evolution. *Am. Micr. J.* xi, pp. 131-134.

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RYDER, J. A. The Origin of Sex through Cumulative Integration, and the Relation of Sexuality to the Genesis of Species. *P. Am. Phil. Soc.* xxviii, pp. 109-159.

*SCHILDE, J. Schach dem Darwinismus! Studien eines Lepidopterologen. Berlin : 8vo, 360 pp.

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*THALLWITZ, J. Ueber Mimicry. *SB. Ges. Isis*, 1890, 1, pp. 9-22.

- TITCHENER, E. B., & FINN, F. Comparative Palatability of Insects, &c. *Nature*, xlii, pp. 571 & 572.
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- Response to criticisms. The immortality of the Protozoa and of germ-cells is potential, cyclical, maintained by natural selection. The distinction between "ideal" and "real" theories. The paternal and maternal reproductive elements are essentially alike. Fertilisation is merely a union of hereditary tendencies. Boveri has shown experimentally that a sperm-nucleus may replace an ovum-nucleus. Sexual reproduction has arisen by and for natural selection as the sole means by which individual variations can be combined in various proportions.
- WELDON, W. F. R. The Variations occurring in certain Decapod Crustacea : 1. *Crangon vulgaris*. *P. R. Soc.* xlvii, pp. 445-453.
- *WERNER, F. Untersuchungen über die Zeichnung der Schlangen. Wien : 8vo, 120 pp., 8 pls. ; *Biol. Centralbl.* x, pp. 694-696.
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- ALLEN, J. A. On Seasonal Variations in Color in *Sciurus hudsonius*. *Bull. Am. Mus. Nat. Hist.* iii, pp. 41-44.
- DRIESCH, H. Heliotropismus bei Hydroidpolypen. *Zool. Jahrb.* v, pp. 147-156, 3 figs.
- ERRERA, L. L'Aimant agit-il sur le Noyau en division ? *Bull. R. Soc. Bot. Belg.* xxix, pp. 17-24.
- *FELL, G. E. The Influence of Electricity on Protoplasm. *Am. Micr. J.* xi, pp. 169-190.
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GREENWOOD, M. Action of Nicotin on Invertebrates. *J. Physiol.* xi, pp. 573-605.

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KOCHS, W. Ueber eine wichtige Veränderung der Körperbeschaffenheit, welche der Mensch und die Säugetiere der gemässigten Zonen im heissen Klima erleiden. *Biol. Centralbl.* x, pp. 289-295.

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*—. Der Heliotropismus der Thiere und seine Uebereinstimmung mit dem Heliotropismus der Pflanzen. Würzburg: 8vo, 118 pp.

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TARULLI, L. La Pressione nell'intorno dell' Uovo di Pollo e i suoi Effetti sullo Sviluppato. Atti e Rend. Acc. med.-chir. Perugia, ii, pp. 121-134.

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VERWORN, M. Die polare Erregung der Protisten durch den galvanischen Strom (Fortsetzung). Arch. ges. Phys. xlvii, pp. 267-303, 3 pls., 5 figs.

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(3) *Heredity.*

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A history beginning with Hippocrates and Aristotle, and ending with Weismann. The opinions of modern naturalists are classified according to the predominance of anthropological, physiological, and pathological considerations. Brooks, Galton, and some others have been overlooked in this record, which is, however, on the whole, very careful.

BOSCHETTI, F. [See Evolution.]

DUPUY, E. De la Transmission Héritaire de Lésions Acquisées. Bull. Sci. Fr. Belg. xxii, pp. 445-448.

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LANKESTER, E. RAY. [See General.] A Theory of Heredity.

——. [Inheritance of Acquired Characters, Panmixia, &c.] Letters to Nature, xli, pp. 415, 416, 486-488, 558, & 559.

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OSBORN, H. F. The Palæontological Evidence for the Transmission of Acquired Characters. Nature, xli, pp. 227 & 228.

There is sufficient palæontological evidence that acquired characters are transmitted.

RITTER, R. [See Reproduction.]

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SPENCER, H. The Inheritance of Acquired Characters. Letter to Nature, xli, pp. 414 & 415.

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[See Evolution.]

WINDLE, B. C. A. Teratological Evidence as to the Heredity of Acquired Conditions. J. L. S. xxiii, pp. 448-502.

Blastogenic malformations are most distinctly hereditary. Undoubtedly somatogenic malformations are non-hereditary. There are some doubtful cases. There are certain malformations which suggest the possibility that they may have been gradually acquired, and subsequently transmitted to descendants.

——. Investigations in Artificial Teratogeny. P. Birmingh. Phil. Soc. vii, pp. 220-232.

(c.) SPECIAL SUBJECTS.

(1.) *Cell and Protoplasm.*

ALTMANN, R. Die Elementarorganismen und ihre Beziehungen zu den Zellen. Leipzig: 8vo, 145 pp., 21 pls., 2 figs.

*APÁTHY, S. Ueber die längsfibrillär-wabige Struktur und ueber Protoplasma-Strukturen im Allgemeinen. SB. Ver. Siebenbürg Ver. xv, Heft 3.

AUERBACH, L. Zur Kenntniss der tierischen Zellen. 1. Ueber zweierlei chromatophile Kernsubstanzen. SB. Ak. Berlin, 1890, pp. 735-749.

Chromatin includes two kinds of substances, which stain in different ways and react differently to chemicals. The so-called achromatin consists for the most part of material belonging to one of the two chromatin substances. According to their staining affinities, the substances are called erythrophil and cyanophil. The former resembles the cell-substance more than the cyanophil does.

BALBIANI, E. G. Sur la Structure intime du Noyau du *Loxophyllum meleagris*. Zool. Anz. xiii, pp. 110-115 & 132-136, 9 figs.

BALLOWITZ, E. Fibrilläre Struktur und Contraktilität. (Vortrag, iii, Congress Anat. Ges. Berlin, 1889.) Arch. ges. Phys. xlv, pp. 433-464.

BALLOWITZ, E. [See Spermatogenesis.]

*BARD, —. Influence spécifique à distance des Éléments Cellulaires les uns sur les autres. Arch. méd. Expér. et d'anat. Pathol. ii, No. 3.

BATAILLON, E. Modifications nucléaires intéressant le Nucléole et pouvant jeter quelque jour sur sa signification. C.R. cx, pp. 1217-1219.

*—. Étude préliminaire sur la Cinèse Nucléolaire dans l'Histolyse chez les Amphibiens. Lyon: 8vo, 16 pp.

*BILLROTH, TH. Ueber die Einwirkung lebendes Pflanzen- und Tierzellen auf einander. Eine biologische Skizze. Allg. Wien. Med. Ztg. xxxv, pp. 343 & 344. Wien: 8vo, 45 pp.

*BARREL, A. Note sur la Division Multiple du Noyau par Karyokinèse. C.R. Soc. Biol. ii (1890) No. 2.

BOVERI, TH. Zellen-Studien. Ueber das Verhalten der chromatischen Kernsubstanz bei der Bildung der Richtungskörper und bei der Befruchtung. Jen. Z. Nat. xxiv, pp. 314-401, 3 pls.

—. The same separately. Jena: 8vo.

BÜTSCHLI, O. Nachahmung von Protoplasma-Strukturen. Verh. 62 Vers. deut. Nat.; Biol. Centralbl. x, pp. 442-444.

[BÜTSCHLI, O.] Weitere Mitteilungen über die Struktur des Protoplasmas. Verh. Ver. Heidelb. iv, pp. 490-512 ; Biol. Centralbl. x, pp. 697-703.

— . Professor Bütschli's experimental imitation of protoplasmic movement. Q. J. Micr. Sci. xxxi, pp. 99-103.

*CHATIN, J. La Cellule Nerveuse. Étude d'Histologie zoologique sur la forme dite Myélocyte. Paris : 8vo, 66 pp., 1 pl.

*CHAVKINE, M. W. Sur la Scission des Cellules organiques. Arch. f. Math. og Natury. xiv, pp. 101-105.

*CHUN, C. Ueber die Bedeutung der direkten Kernteilung. Schr. Ges. Königsb. xxxi, 6 pp.

*COX, C. F. Protoplasm and Life. New York : 8vo, 67 pp.

*DEMME, W. Ueber einen neuer Eiweiss-liefernden Bestandteil des Protoplasmas. Dorpat : 8vo, 38 pp.

ERBERA, L. L'Aimant agit-il sur le Noyau en division. Bull. R. Soc. Bot. Belg. xxix, pp. 17-24.

Electro-magnetic currents seemed to have no effect on dividing nuclei.

*FAYOD, V. Ueber die wahre Struktur des lebendigen Protoplasmas und der Zellmembran. Nat. Rundschau, v, pp. 81-84.

FLEMMING, W. Ueber die Theilung von Pigmentzellen und Capillärwandzellen. Ungleichzeitigkeit der Kerntheilung und Zelltrennung. Arch. mikr. Anat. xxxv, pp. 275-286, 1 pl.

FROMMANN, C. Ueber neuere Erklärungsversuche der Protoplasma-Strömungen und über die Schaumstrukturen Bütschli's. Anat. Anz. pp. 648-652 & 661-672, 4 figs.

The movements of fluids in the "artificial cells" made by Quincke and by Bütschli are in many ways different from those of living matter. For in the latter there may be co-existent streams in opposite directions, stoppage and reversal of the streaming also occur. The protoplasmic movements are retarded and stopped by cutting off the supply of oxygen, therefore they are obviously dependent on metabolism. There are many illustrations of vacuolated protoplasm ; often the structure is rather that of a broken than of a complete network. Framework and network may result from the modification of vacuoles with originally intact walls ; but in many cases there is a genuine network.

— . Zelle. Real-Encyklop. d. ges. Heilkunde, xxi, pp. 459-501, 19 figs.

*GERASSIMOFF, J. Einige Bemerkungen über die Funktion des Zellkernes. Bull. Mosc. (n.s.) iv, pp. 548-554.

GILSON, G. On Secreting Cells. Rep. Brit. Ass. 1890, pp. 861 & 862.

All the cases of cellular secretion are reduced to two general processes : the regular filtration and the direct pouring out.

GOODALE, G. L. Some Recent Investigations relative to Cell-contents. P. Am. Ass. xxxviii, pp. 259-272.

HANSEMAN, D. Ueber asymmetrische Zelltheilung in Epithel von Krebsen und deren biologische Bedeutung. Arch. path. Anat. cxix, pp. 299-326, 1 pl.

HARTOG, M. M. The State in which the Water exists in Live Protoplasm. J. R. Micr. Soc. 1890, pp. 441 & 442; Rep. Brit. Ass. 1889.

(1) Live protoplasm is transparent, and of low refractivity ($\mu < 1.38$); (2) Dead protoplasm is opaque from optical heterogeneity; (3) The transparency of dead protoplasm is restored by replacing the liquid that permeates it by a medium of higher refractive index; (4) The substance so permeated is solid and of high refractivity ($\mu > 1.53$); (5) In death the solid substance forms a sort of reticulum too fine for resolution by our microscopes, the interstices of which are permeated by the watery liquid; in life, the two are combined in the form of a viscid liquid; hence death is essentially a phenomenon of precipitation.

*HEITZMANN, C. La Constitution reconnue par l'État d'une seule espèce d'Éléments ou Plastides. J. Microgr. xiv, pp. 262-270.

*HENNEGUY, L. F. Nouvelles recherches sur la Division des Cellules embryonnaires chez les Vertébrés. CR. Soc. Biol. ii, pp. 444-446.

HERMANN, F. Die Entstehung der karyokinetischen Spindelfigur. Münchener med. Wochenschr. xxxvii, pp. 830-831.

HERTWIG, O. Vergleich der Ei- und Samenbildung bei Nematoden. Eine Grundlage für celluläre Streitfragen. Arch. mikr. Anat. xxxvi, pp. 1-138, 4 pls.

— Experimentelle Studien am tierischen Ei vor, während, und nach der Befruchtung. Jen. Z. Nat. xxiv, pp. 268-313, 3 pls.

HOFER, B. Experimentelle Untersuchungen über den Einfluss des Kerns auf das Protoplasma. T. c. pp. 105-176, 2 pls.

HOYER, H. Ueber ein für das Studium der "direkten" Kernteilung vorzüglich geeignetes Objekt. Anat. Anz. v, pp. 26-29, 1 fig.

Ova of *Rhabdonema nigrovenosum*.

KRAFT, H. Zur Physiologie des Flimmerepithels bei Wirbelthieren. Arch. ges. Phys. xlvii, pp. 196-235, 4 cuts.

LECLERCQ, E. Contributions à l'étude du Nebenkern ou Corpuscule Accessoire dans les Cellules. Bull. Ac. Belg. lx, pp. 137-148, cf. pp. 10-13.

LEYDIG, F. Intra- und interzelluläre Gänge. Biol. Centralbl. x, pp. 392-396.

*LÖWIT, M. Ueber Amitose (direkte Teilung). Centralbl. f. allg. Pathol. i, pp. 281-286.

MARSHALL, C. F. Observations on the Structure and Distribution of Striped and Unstriped Muscle in the Animal Kingdom, and a Theory of Muscular Contraction. Mem. Biol. Owens Coll. iii, pp. 73-101, 1 pl.

- [MARSHALL, C. F.] Further Observations on the Histology of Striped Muscle. *Q. J. Micr. Sci.* xxxi, pp. 65-82, 1 pl.
- *MATZDORFF, C. Zur Zellenlehre. *Nat. Wochenschr.* v, pp. 351-353.
- *PALADINO, G. Gl' infinitamente piccoli o i trionfi della dottorna cellulare. *Disc. inaug.* Napoli: 4to, 25 pp.
- PFEFFER, W. Zur Kenntniss der Plasmahaut und der Vacuolen nebst Bemerkungen über den Aggregatzustand des Protoplasma und über osmotische Vorgänge. *Abh. Sächs. Ges.* xvi, pp. 187-342, 1 pl.
- *RABL, C. Bemerkungen über den Bau der Zelle. *Prag. med. Wochenschrift*, xv, p. 69; *Wiener Klm. Wochenschrift*, iii, p. 136.
- *——. Bemerkungen über den Bau und die Entwicklung der Gewebe. *Fortschritte d. Medicin*, viii, pp. 81-87.
- RANVIER, L. Des Clasmatoocytes. *C.R.* cx, pp. 165-169.
A stage in the history of leucocytes.
- . Observation microscopique de la Contraction des Fibres Musculaires vivantes, lisses et striées. *C.R.* cx, pp. 613-617.
- v. RATH, O. Ueber eine eigenartige polycentrische Anordnung des Chromatins. *Zool. Anz.* xiii, pp. 231-238, 1 fig.
- RUTHERFORD, W. On the Structure and Contraction of Striped Muscular Fibre of the Crab and Lobster. *P. R. Soc. Edinb.* xvii, pp. 146-149.
- BURDON SANDERSON, J. S. La Physiologie du Protoplasma. *Rev. Sci.* xlv, pp. 65-73.
Translation of address at British Association, 1889.
- SANFELICE, F. Contributo alla conoscenza di alcune Forme Nucleari. *Boll. Soc. Nat. Napoli*, iv, pp. 21-25, 1 pl.
- SCHÜRMAYER, C. B. Ueber den Einfluss äusserer Agentien auf einzellige Wesen. *Jen. Z. Nat.* xxiv, pp. 402-470, 1 pl.
- SCHULTZE, E. Ueber Zelltheilung. *SB. Ges. Würzb.* 1890, 4 pp.
- TURNER, W. The Cell-Theory, Past and Present. *J. Anat. Physiol.* xxiv, pp. 253-287; *Nature*, xliii, pp. 10-15 & 31-37.
- VERSON, E. Zur Biologie der Zelle. *Zool. Anz.* xiii, pp. 91 & 92, 6 figs.
- VERWORN, M. Biologische Protisten-Studien. *Z. wiss. Zool.* 1, pp. 443-468, 1 pl., 3 figs.
- WOODHEAD, G. SIMS, & WOOD, G. E. CARTWRIGHT. The Physiology of the Cell Considered in relation to its Pathology. *Edin. Med. J.* xxxv, pp. 936-943, 1036-1048, & 1133-1147.

(2.) *Oogenesis.*

- BOVERI, TH. Zellen-Studien. Ueber das Verhalten der chromatischen Kernsubstanz bei der Bildung der Richtungskörper und bei der Befruchtung. *Jen. Z. Nat.* xxiv, pp. 314-401, 3 pls.

[BOVERI, TH.] The same separately. Jena : 8vo.

The several chromosomes may be traced throughout maturation. The chromosomes present in the division of the egg-cell are identical with those which the cell had at its formation. The elements emitted in the polar globules seem identical with those that remain in the egg. The nucleus is not a unity so much as a common house for a number of equivalent, mutually independent chromosomes. For every species the number of chromosomes is constant. The polar globules are rudimentary ova. When the second polar spindle is not removed, the number of chromosomes in such a (parthenogenetic) egg is the same as in a fertilized ovum.

CHATIN, J. Sur les Cellules initiales de l'Ovaire chez les Hydres d'eau douce. C.R. cx, pp. 414-416.

What have been described as free nuclei are really minute cells.

CUNNINGHAM, J. T. Reproduction and Development of Teleostean Fishes. J. Mar. Biol. Ass. i, pp. 10-54, 6 pls.

EIGENMANN, C. H. On the Egg Membranes and Micropyle of some Osseous Fishes. Bull. Mus. C. Z. xix, pp. 129-155, 3 pls.

GIARD, A. Sur les Globules Polaires et les homologues de ces éléments chez les Infusoires ciliés. Bull. Sci. Fr. Belg. xxii, pp. 202-221.

*GÖTTE, A. Entwicklungsgeschichte des Flussneunauges (*Petromyzon fluviatilis*). Abh. z. Entwicklungsgesch. d. Tiere. Heft v, 4to, v & 95 pp., 9 pls. & figs.

GROBEN, C. Ueber Boveri's Fund der Entwicklung eines Organismus aus befruchteten Eifragmenten ohne Eikern. Verh. z.-b. Ges. Wien, xl, pp. 4 & 5.

*GRÖNROOS, H. Ueber die Eifurchung bei den Tritonen. Helsingfors : 8vo, 60 pp., 2 pls.

GUIGNARD, L. Sur le Mode d'Union des Noyaux Sexuels dans l'acte de Fécondation. C.R. cx, pp. 726-728.

*——. Sur la Formation et la Différenciation des Éléments Sexuels qui interviennent dans la Fécondation. J. Microgr. xiv, No. 6.

HAECKER, V. Ueber die Reifungsvorgänge bei *Cyclops*. Zool. Anz. xiii, pp. 551-558, 1 pl.

HENKING, H. Ueber Befruchtungsvorgänge im Insektenei. Verh. 62 Vers. deut. Nat. p. 264 ; Biol. Centralbl. x, pp. 439 & 440.

——. Untersuchungen über die ersten Entwicklungsvorgänge in den Eiern der Insekten. 1. Das Ei von *Pieris brassica*, L., nebst Bemerkungen über Samen und Samenbildung. Z. wiss. Zool. xlix, pp. 503-564, 3 pls.

HENNEGUY, L. F. Nouvelles recherches sur la Division des Cellules embryonnaires chez les Vertébrés. C.R. cxi, pp. 116 & 117.

Attractive spheres and central corpuscles in the ova of the Trout.

HERTWIG, O. Experimentelle Studien am tierischen Ei vor, während, und nach der Befruchtung. *Jen. Z. Nat.* xxiv, pp. 268-313, 3 pls.

Delayed spawning of *Echinus microtuberculatus* and *Strongylocentrotus lividus* seemed to make the ova pathological. Some would not fertilize at all; many were susceptible to multiple fertilization; segmentation, if it began, was pathological. Influences of lowered temperature on segmenting ova. Ova of *Strongylocentrotus* may take up methyl blue pigment, and this can be seen in the blastula stage. Ova of starfishes may begin to segment without fertilization.

HERTWIG, O. Vergleich der Ei- und Samenbildung bei Nematoden. Eine Grundlage für celluläre Streitfragen. *Arch. mikr. Anat.* xxxvi, pp. 1-138, 4 pls.

The mother sperm-cell is the homologue of the immature ovum. During a prolonged resting-state, the nuclear substance in both is peculiarly prepared for two successive cell-divisions. The homology holds true throughout. The two daughter-sperm-cells correspond to the ovum and the first polar body; the four spermatozoa are equivalent to the ripe ovum, the second polar body, and the two spheres arising from the division of the first; the polar bodies have the morphological rank of rudimentary egg-cells. They are abortive ova; their production is comparable to that of spermatozoa from a mother-sperm-cell; their persistence is explained by the physiological importance of the reduction which they effect in the mass of the germinal vesicle.

HICKSON, S. J. On the Maturation of the Ovum, and the Early Stages in the Development of *Allopora*. *Q. J. Micr. Sci.* xxx, pp. 579-598, 1 pl.

It seems probable that the "trophodisc" is not a reduced Medusa. The oosperm nucleus undergoes fragmentation. Ova and young embryos are found in the younger branches; the sperm-morulae and sperms in the older branches. The ovum pushes out the endoderm and ectoderm of the canal in which it is formed, and makes for itself a diverticulum.

HOLL, M. Ueber die Reifung der Eizelle des Huhns. *SB. Ak. Wien*, xcix, pp. 309-370, 1 pl.

The vitelline membrane or tunica adventitia, the follicular epithelium or membrana granulosa, and the membrana propria, all arise from the stroma of the ovary. The nucleus undergoes considerable changes during maturation. The zona radiata is a product of the cells of the membrana granulosa.

JANOŠIK, J. Bemerkungen über die Entwicklung des Genitalsystems. *T. c.* pp. 260-288, 1 pl.

KASTSCHENKO, N. Ueber den Reifungsprocess des Selachiereies. *Z. wiss. Zool.* l, pp. 429-442, 1 pl.

During maturation of ova in *Pristiurus*, *Torpedo*, and *Scyllium*, the polar globules are formed by karyomitotic division; one is separated off in the ovary, and the other probably at the time of fertilisation.

KUPFER, C. Die Entwicklung von *Petromyzon planeri*. Arch. mikr. Anat. xxxv, pp. 469-558, 6 pls.

*LOEWENTHAL, N. Die Befruchtung, Reifung, und Teilung des Eies von *Oxyurus ambigua*. Month. Int. J. Anat. Hist. vii, pp. 341-374, 375-385, 2 pls., & pp. 469-514, 2 pls.

MARK, E. L. Studies on *Lepidosteus*. Bull. Mus. C. Z. xix, pp. 1-127, 9 pls.

Inter alia, observations on the egg-membranes, with a historical and critical review of the literature on the primary egg-membranes and the micropyle in fishes. Both egg-membranes are radially striated. There is a single micropyle, with a funnel and a canal. The granulosa of the mature ovarian ovum is a single layer, except at the funnel. The homologue of the zona radiata is found in representatives of all groups of fishes. It is produced by the ovum. The evolution of the micropylar apparatus.

McINTOSH, W. C., & PRINCE, E. E. Development and Life-history of Teleostean Food- and other Fishes. Tr. R. Soc. Edinb. xxxv, pp. 665-946, 28 pls.

Much in regard to the ova.

MINOT, C. S. The Concrescence Theory of the Vertebrate Embryo. Am. Nat. xxiv, pp. 501-516, 617-629, & 702-719, 22 figs.

MORGAN, T. H. The Origin of the Test-Cells of Ascidians. J. Morph. iv, pp. 195-204, 1 pl.

PALADINO, G. I ponti intracellulari tra l'Uovo Ovarico e le Cellule Follicolari, e la Formazione della Zona Pellucida. Anat. Anz. pp. 254-259, 1 fig.

*PETIPIERRE, L. Ueber das Eindringen von Granulosazellen durch die Zona Pellucida menschlicher Eier. Inaug. Diss. Bern: 8vo, 27 pp., 3 figs.

PRINCE, E. E. [See McIntosh, W. C.]

RITTER, R. Die Entwicklung der Geschlechtsorgane und des Darmes bei *Chironomus*. Z. wiss. Zool. i, pp. 408-427, 1 pl.

ROSSI, U. Contributo alla Maturazione delle Uova degli Anfibi. Anat. Anz. pp. 142 & 143,

* —. Sulla Destrusione degli Spermatozoi negli organi genitali interni feminali del *Mus musculus*. Month. Int. J. Anat. Hist. vii, pp. 196-203.

SALENSKY, W. Beiträge zur Embryonal-entwicklung der Pyrosomen. Zool. Jahrb. iv, pp. 424-477, 3 pls.

A chapter on oogenesis.

SCHIMKEWITSCH, W. Sur la Signification des Cellules Vitellines chez les Trachéates. Zool. Anz. xiii, pp. 399-404, 2 figs.

TOLGER, B. Die Richtungskörperchen von *Balanus*. T. c. pp. 607-609.

- VERSON, E. Del grado di Sviluppo che sogliono raggiungere le Uova non fecondate del Filugello. Bull. Soc. Ent. Ital. xxi, pp. 118-123.
- WALDEYER, W. De la Caryocinèse et de ses relations avec le processus de la Fécondation. (Supplément traduit et annoté par PAUL GARNAULT) Bull. Sci. Fr. Belg. xxii, pp. 88-122, 1 pl.
- WATASE, S. Studies on Cephalopods. I. Cleavage of the Ovum. J. Morph. iv, pp. 247-302, 4 pls.; cf. Johns Hopk. Univ. Circ. ix, pp. 53-56.

The achromatin spindle is most important in karyokinesis. By it the chromatin of the spindle is divided among the daughter-cells. The whole phenomena may be connected in one continuous series of activities of the cytoplasmic asters upon the nucleus.

(3) *Spermatogenesis.*

- BALLOWITZ, E. Untersuchungen über die Struktur der Spermatozoen, zugleich ein Beitrag zur Lehre vom feineren Bau der kontraktile Elemente. Die Spermatozoen der Insekten. (I. Coleopteren.) Z. wiss. Zool. I, pp. 317-407, 4 pls.

The contractile part of the spermatozoa, and especially the undulatory membrane or fringe, consists of or contains very fine fibrils.

- . Untersuchungen über die Struktur der Spermatozoen. Theil III. Fische, Amphibien und Reptilien. Arch. mikr. Anat. xxxvi, pp. 225-290, 2 pls.

- *——. Das Retzius'sche Endstück der Säugetiere-Spermatozoen. Month. Int. J. Anat. Hist. vii, pp. 211-223, 1 pl.

- CUCCATI, G. Spermatogenesi nelle *Rana esculenta*. Anat. Anz. v, pp. 344-346.

- *HENKING, H. Ueber Reduktionsteilung der Chromosomen in den Samenzellen der Insekten. Month. Int. J. Anat. Hist. vii, pp. 243-249.

——. [See Oogenesis.]

- HERRMANN, G. Sur la Structure et le Développement des Spermatozoides chez les Décapodes. Bull. Sci. Fr. Belg. xxii, pp. 1-59, 4 pls., 15 figs.

- LECLERCQ, E. [See Cell.]

The sperm-cells contain a chromatin nucleus and a Nebenkern corresponding to Boveri's archoplasm. The latter is a constant element in cells.

- SABATIER, A. De la Spermatogénèse chez les Locustides. C.R. cxi, pp. 797-799.

The degeneration of the nucleus as such, the formation of the sperm-head from a protoplasmic vesicle invested internally with chromophilous granules.

WHITMAN, C. O. Spermatophores as a Means of Hypodermic Impregnation. *J. Morph.* iv, pp. 361-406, 1 pl.

(4) *Sex and Reproduction.*

BATESON, W. On some Cases of Abnormal Repetition of Parts in Animals. *P. Z. S.* iii, pp. 579-588, 4 cuts.

BONNIER, J. Le Dimorphisme des Mâles chez les Crustacés Amphipodes. *C.R.* cxi, pp. 987-989.

BOSCHETTI, F. [See Evolution.]

BOULENGER, G. A. Note on the Secondary Sexual Characters in the South-African Tortoises of the Genus *Homopus*. *P. Z. S.* lxxviii, p. 521.

CANU, E. Sur le Dimorphisme Sexuel des Copépodes Ascidiocols. *C.R.* cxi, pp. 757-759.

CONTEJEAN, CH. Sur l'Autotomie chez la Sauterelle et le Lézard. *T. c.* pp. 611-614.

CUNNINGHAM, J. T. On Secondary Sexual Characters in the Genus *Armoglossus*. *P. Z. S.* lxxviii, pp. 540-546.

*DADAY, E. VON. Ein interessanter Fall der Heterogenesis bei den Räderthieren. *Ber. Math. Nat. Ungarn*, vii, pp. 140-156, 1 pl.

In *Asplanchna sieboldii* the fertilised ova with thick membranes develop into tubular parthenogenetic females, which give rise to tubular and male-like females and to males. The tubular females, after copulation with males, lay fertilised ova with thick membranes. The male-like females give rise parthenogenetically to other male-like females, to tubular females, and to males. After copulating with the last, they lay fertilised ova. The heterogenesis is thus very complex.

HARMER, S. F. On the Regeneration of Lost Parts in *Polyzoa*. *Rep. Brit. Ass.* (1890), pp. 862 & 863.

HARTERT, E. Ueber Oologie und ihre Bedeutung für die Wissenschaft. *Ber. Senck. Ges.* (1890), pp. 37-49.

HEAPE, W. Preliminary Note on the Transplantation and Growth of Mammalian Ova within a Uterine Foster-Mother. *P. R. Soc.* xlviii, pp. 457 & 458.

It is possible to make use of the uterus of one variety of rabbit as a medium for the growth and complete fœtal development of fertilised ova of another variety of rabbit.

HERTWIG. [See Oogenesis.] *Jen. Z. Nat.* xxiv, pp. 268-313, 3 pls.

Confirming Greeff's observation that the ova of starfishes (*Asterias*

glacialis and *Astropecten*) may begin to develop without fertilization. The blastula stage may be reached. It seemed as if a second nuclear division, but no second extrusion, occurred during the maturation of these parthenogenetic ova.

*HERZ, —. Beitrag zur Frage über die Vorausbestimmung des Geschlechts. Arch. f. Thierheilk. xvi, pp. 84–100.

FULTON, T. W. The Proportional Numbers and Sizes of the Sexes among Sea Fishes. Rep. Fish. Scotl. viii, pp. 348–350.

*GEISSLER, A. Beiträge zur Frage der Geschlechtsverhältnisse der Geborenen. Zeitschrift. k. Sächs. Statistischen Bureau, xxxv, Heft 1 & 2. Report in Biol. Centralbl. ix, pp. 761 & 762.

GRUBER, A. Die Konjugation der Infusorien. Biol. Centralbl. x, pp. 136–150, 1 fig.

On the results of Maupas and R. Hertwig.

GUÏTEL, F. Sur les Différences Sexuelles du *Lepadogaster bimaculatus*, Flem. C.R. cxi, pp. 759–761.

JANOSIK, J. [See Oogenesis.] SB. Ak. Wien, xcix, pp. 260–288, 1 pl.

If all were developed that is implicit in the incipient reproductive organs in Mammals, the result would be hermaphrodite organs, with internal testes and ovaries surrounding them. The same is true of the fowl. The cells, which form spermatozoa, are descended from those due to the primary proliferation of the germinal epithelium; the cells from which ova are formed are ontogenetically younger.

KLEBS, G. Nachtrag zu dem Aufsatz: Zur Physiologie der Fortpflanzung. Biol. Centralbl. ix, pp. 753–755; cf. t. c. pp. 609–617.

KLEIN, L. Vergleichende Untersuchungen über Morphologie und Biologie der Fortpflanzung bei der Gattung *Volvox*. *Volvox* Studien. III. Ber. Freiburg Ges. v, pp. 1–92, 5 pls.

Important in relation to genera problems.

*LAMEERE, A. Études sur la Reproduction. I. À propos de la Maturation de l'Œuf Parthénogénétique. II. Recherches sur la Réduction Karyogamique. Bruxelles: 8vo, pp. 88 & 78, 3 pls.

LANKESTER, E. RAY. [See General.] Essay on Parthenogenesis.

MALACQUIN, A. Sur la Reproduction des Autolytes. C.R. cxi, pp. 989–991.

MAUPAS, E. Sur la Multiplication et la Fécondation de l'*Hydatina senta*, Ehr. T. c. pp. 310–314 & 505–507.

The "winter-eggs" of *Hydatina senta* are the fertilised eggs. Copulation has no effect on those forms that are about to lay female eggs. Each egg is predestined in the maternal ovary. There is, in this case, no advantage in cross-fertilisation.

*[MAUPAS, E.] Le Rejeunissement Karyogamique chez les Ciliés. J. Microgr. xiv, pp. 274-281.

MEYER, A. B. Letter on the "Evolution of Sex" in Birds. Nature, xli, p. 272.

NUSSBAUM, M. Die Umstülpung der Polypen. Erklärung und Bedeutung dieses Versuchs. Arch. mikr. Anat. xxxv, pp. 111-120.

PEMBREY, M. S. Letter on the Evolution of Sex in Pigeons. Nature, xli, p. 199.

RATH, O. VOM. Ueber die Fortpflanzung der Diplopoden (Chilognathen). Ber. Freiburg Ges. v, pp. 1-28, 1 pl.

RHOADS, S. N. Probable Causes of Polygamy among Birds. Am. Nat. xxiv, pp. 1024-1036.

"Sexual selection in favour of beauty of colour and form of secondary characters, whether voluntary or the results of man's interference, is always accompanied by proportionate increase of sexual vigour. Such increase is a provision of nature to meet the excessive demands of consequent polygamous practices. Such prepotency being born, so to speak, of sexual selection, may be restrained by unfavourable climatic conditions, or inherent specific peculiarities in its tendency to produce such practices, while among species that are free from these limitations polygamy finds willing victims."

RITTER, R. Die Entwicklung der Geschlechtsorgane und des Darmes bei *Chironomus*. Z. wiss. Zool. l, pp. 408-427, 1 pl.

The reproductive organs arise from previously extruded pole-cells, as Metschnikoff suggested, and as Balbiani carefully described.

ROSENSTADT, B. Zur Frage nach den Ursachen, welche die Zahl der Conceptionen beim Menschen in gewissen Monaten des Jahres regelmässig steigern. MT. embr. Inst. Wien. Heft ii (1890), pp. 75-97.

"The original physiological custom (inherited from Mammalian ancestors) only to reproduce at certain seasons, is still expressed in the periodical increase in the number of conceptions."

RYDER, J. A. The Origin of Sex through Cumulative Integration, and the Relation of Sexuality to the Genesis of Species. P. Am. Phil. Soc. xxviii, pp. 109-159.

An important contribution to the theory of sex.

SEELIGER, O. Bemerkungen zur Knospenentwicklung der Bryozoen. Z. wiss. Zool. l, pp. 560-599, 2 pls., 1 cut.

BROWN-SÉQUARD, —. Nouveaux faits relatifs à l'Injection sous-cutanée, chez l'Homme, d'un Liquide extrait de Testicules de Mammifères. Arch. Phys. xxii, pp. 201-208.

—. Exposé de faits nouveaux à l'égard de l'Influence d'un Liquide extrait des Testicules d'Animaux. T. c. pp. 443-455.

[BROWN-SÉQUARD, —.] Remarques sur les effets produits sur la Femme par des Injections cutanées d'un Liquide retiré d'Ovaires d'Animaux. *T. c.* pp. 456 & 457.

——. Nouveaux faits relatifs à l'Influence sur les Centres Nerveux de l'Homme d'un Liquide extrait de Testicules d'Animaux. *T. c.* pp. 641–648.

WAGNER, FR. V. Zur Kenntniss der ungeschlechtlichen Fortpflanzung von *Microstoma*, nebst allgemeinen Bemerkungen über Theilung und Knospung im Thierreich. *Zool. Jahrb.* iv, pp. 349–423, 4 pls.

VERSON, E. Zur Parthenogenesis beim Seidenspinner. *Zool. Anz.* xiii, pp. 44 & 45.

ZELLER, E. Ueber die Befruchtung bei den Urodelen. *Z. wiss. Zool.* xlix, pp. 583–601, 3 figs.

MAMMALIA.

BY

R. LYDEKKER, B.A., F.G.S.

THE following table shows the number of new generic and specific names recorded for the year 1890:—

NEW GENERA.	RECENT.	FOSSIL.	NEW SPECIES.	RECENT.	FOSSIL.
23	2	21	165	101	64

The extraordinary large number of new recent species is, to a considerable extent, due to the elevation to specific rank of a host of North American forms which would be regarded by most zoologists as varieties; nearly 40 of the new species belong to this category. Of the new species which would be generally recognized, a large number occur in the Bats, the *Soricidæ*, *Sciuridæ*, and *Leporidæ*. In addition to the above, one new generic and one specific name have been proposed to replace two ineligible ones applied to recent forms; and also the generic name for a fossil one.

Although a large amount of work has been done during the year, there is nothing to call for very especial mention; the discovery of milk-teeth in *Orycteropus* is, however, an important one.

Among the more important memoirs recorded, we may refer to the continuation of BÜCHNER'S Monograph of the Mammals collected by Przewalski; and also to that of the Lemuroids of Madagascar by GRANDIDIER & MILNE-EDWARDS. MIVART'S handsome Monograph of the *Canidæ* is also noteworthy, as well as the Monograph of the *Myoxidæ* by REUVENS. The year has seen the completion of SCHLOSSER'S important memoir on the Tertiary Mammals of Europe. RODLER & WEITHOFER have published an important contribution to our knowledge of the Pecora of the Maragha beds of Persia; SCOTT & OSBORN have done

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the journal or work referred to.

valuable work in reviewing and completing our knowledge of several groups of North American fossil Mammals; and FILHOL has done good work on those of the French Miocene.

I.—THE GENERAL SUBJECT.

ALLEN, H. [See *Vespertilionidæ*, *Emballonuridæ*, and *Phyllostomatidæ*.]

ALLEN, J. A. List of Mammals collected by Mr. C. P. Streater in British Columbia, with Descriptions of two New Subspecies of *Sciurus*. Bull. Am. Mus. Nat. Hist. iii, pp. 161–168.

Two new varieties of *Sciurus* are described. [See *Sciuridæ*.]

——. Notes on Collections of Mammals made in Central and Southern Mexico by Dr. A. C. Buller, with Descriptions of New Species of *Vespertilio*, *Sciurus*, and *Lepus*. T. c. pp. 175–194.

The total number of species noticed is 48, among which the following are new, viz.: 1 *Vespertilio*, 1 *Sciurus*, and 2 *Lepus*. [See *Vespertilionidæ*, *Sciuridæ*, and *Leporidæ*.]

*ALMERA, —, & BOFILL, —. Descubrimiento de grandes Mamíferos fosiles en Cataluña. Cron. cient. x, 4 pp. 1887. [Omitted from Zool. Rec. xxiv.]

AMEGHINO, F. [See *Multituberculata*.]

ANON. Durata della Gestazione nei Mammiferi. Boll. scient. xi, pp. 106–110. [See Monit. Zool. Ital. i, pp. 94 & 95.]

Gives the duration of pregnancy in a large number of species of Mammals.

BAKER, SIR S. W. Wild Beasts and their ways: Reminiscences of Europe, Asia, Africa, and America. London: 8vo, 1890, 2 vols., illustrated.

A sporting account of many of the larger Mammals of various countries.

BALLOWITZ, E. [See *Chiroptera*.]

BARDELEBEN, K. Ueber die Hand- und Fuss-Muskeln der Säugetiere, besonders die des Präpollex (Præhallux) und Postminimus. Anat. Anz. v, pp. 435–444. [See also t. c. p. 556.]

This paper records further observations on the presence of rudiments of a prepollex, &c., in Mammals. There is a full description of the muscles attached to their rudiments; the dissections which the author undertook for this purpose having also led him to a consideration of the homologies of certain palmar and plantar muscles, of which full details are given. [See also *Dipodidæ*, and EMERY & CARLSSON.]

BEDDARD, F. E. [See *Otariidæ*.]

BEEVOR, C. E. [See *Primates* and *Hapalidæ*.]

^aBIANCHI, S. Alcune Particolarità della Cariocinesi studiati negl' Invilluppi Fetali dei Mammiferi. Parma: 1889, 8vo, 12 pp. [See *Monit. Zool. Ital.* i, p. 14.]

Based on observations of the foetal membranes of *Mus musculus*.

BIEHRINGER, J. [See *Rodentia*.]

BLANFORD, W. P. [See *Bovidæ*.]

BOAS, J. E. V. [See *Artiodactyla*.]

BOCAGE, J. V. BARBOZA DU. Mammifères d'Angola et du Congo. J. Sci. Lisb. (2) ii, pp. 1-32, pl. i.

The completion of the memoir quoted in *Zool. Rec.* xxvi, *Mamm.* p. 4. Treats of the *Rodentia* (in which there is 1 new species of *Sciurus*, 1 of *Gerbillus*, and 2 of *Mus*), *Proboscidea*, *Hydrochoidea*, *Perissodactyla*, *Artiodactyla*, *Sirenia*, and *Edentata*. In an appendix a new species of *Herpestes* is described. [See *Viverridæ*, *Sciuridæ*, and *Muridæ*. See also *Spalacidae*.]

BOGDANOV, A. [See *Castoridæ*.]

BOUVIER, E. L. [See *Bovidæ*.]

BRÉZEL, H. [See *Carnivora*.]

BROOM, R. On the Fate of the Quadrate in Mammals. *Ann. N. H.* (6) vi, pp. 409-411.

After reviewing previous theories as to the representative of the Sauropsidan quadrate in Mammals, the author suggests that its true equivalent is to be found in the interarticular mandibular cartilage, for which the name "quadrate cartilage" is proposed if the author's theory be confirmed.

BÜCHNER, E. Die Säugethiere der Kansu-Expedition (1884-1887). *Mél. biol.* xiii, pp. 143-164. [Cover of separate copies dated 1890, but the date Jan., 1891, at end of text.]

A preliminary description of the Mammals collected in Kansu, N. W. China. Among the species recorded are *Semnopithecus roxellana* and *Eluopus melanoleucus*, both of which occur in the mountain-range between Kansu and Szechuen. *Sciurus mccllellandi* is referred to *Tamias*. A new species of *Moschus* is described, and the new name *Gazella przewalskii* proposed. [See *Sciuridæ*, *Bovidæ*, and *Cervidæ*. See also *Rodentia*.]

CACCIAMALI, G. B. [See *Proboscidea*.]

CALDERON, S. [See *Rodentia*.]

CARAZZI, D. La Grotta dei Colombi, all' Isola Palmaria (Golfo di Spezia). *Ann. Mus. Genov.* (2) ix, pp. 33 & 43.

Gives a list of the species of Mammals represented in these deposits.

CARLSSON, A. Von den weichen Theilen der so-geannten Präpollex und Prähallux. Biol. Fören. ii, pp. 117-124.

Describes the muscles of the prehallux and prepollex in a number of Mammals.

CIACCIO, G. V. Sur les Plaques Nerveuses Finales dans les Tendons des Vertébrés. Arch. Ital. Biol. xiv, pp. 31-57, pls. i-vi.

Further researches concerning the mode of terminations of nerves on tendons, pp. 32-40 being devoted to those of Mammals.

COCKERELL, T. D. A. Contributions towards a List of the Fauna and Flora of West Mountain Valley, Colorado. West. Am. Scientist, vii, pp. 7 & 8.

This part gives a list of the Mammals, of which there are 23 species.

COCKS, A. H. [See *Cetacea*.]

COPE, E. D. [See *Canidæ*, *Mustelidæ*, *Cetacea*, and *Sirenia*.]

CRAWSHAY, R. [See *Bovidæ*.]

DATTAN, A. Ueber Tiger, Bären, und Wildschweine des Ussuri-Gebietes. Zool. Gart. xxxi, pp. 289-296.

The species recorded from the neighbourhood of the Usuri river, in Manchuria, are *Felis tigris*, *Ursus arctos*, *U. tibetanus*, and *Sus scrofa*.

D'ORCET. [See *Equidæ*.]

DEPÉRET, C. Les Animaux Pliocènes du Roussillon. Mém. Soc. Géol. — Pal. i, Mém. No. 3, pp. 1-64, pls. iv-vii.

The first two parts of a memoir describing the fossil Vertebrates of the Pliocene of Roussillon. The forms described include *Dolichopithecus rusciniensis*, *Machærodus cultridens*, *Felis* (*Caracal*) *brevirostris*, *Viverra peptræi*, *Vulpes donnezani*, n. sp., *Ursus* (*Helarctos*) *arvernensis*, *Felis*, sp., *Talpa*, sp., *Hystrix primigenia*, *Castor*, sp., *Sciuroides*, sp., *Mus donnezani*, n. sp., *Lophiomys pyrenaicus*, n. sp., *Cricetus angustidens*, n. sp., *Lagomys corsicanus*, *Lepus*, sp., *Ruscinomys europæus*, n. g. & sp., *Mastodon arvernensis*. [See *Canidæ* and *Muridæ*.]

DOBSON, J. E. [See *Insectivora*.]

DOLLO, L. [See *Sirenia*.]

DONNEZAN, A. Découverte de Nouveaux Fossiles au Serrat-d'en-Vaquer. Soc. Agricole Pyrén.-orient. xxxi, pp. 137-143.

Records the discovery of the Mammalian fossils from the neighbourhood of Perpignan, which are described by C. Depéret in the memoir cited above.

DUNN, —. [See *Otariidæ*.]

DUVAL, M. L'Ectoplacenta de la Souris et du Rat. C.R. Soc. Biol. (9) ii, pp. 567 & 568.

[DUVAL, M.] De la Couche Plasmodiale Endovasculaire du Placenta Maternal. *T. c.* pp. 605 & 606. [See also *Rodentia*.]

EMERY, C. Zur Morphologie des Hand- und Fuss-skeletts. *Anat. Anz.* v, pp. 282-294, woodcuts.

Contains observations on Bardeleben's description of the prepollex of *Pedetes*, and concludes that ancestral Mammals had no free prepollex or prehallux.

FABRINI, E. [See *Felidæ*.]

FATIO, V. [See *Vespertilionidæ*.]

FEILDEN, H. W. Notes on the Terrestrial Mammals of Barbadoes. *Zool.* (3) xiv, pp. 52-55.

FICALBI, E. Sulle Ossa Accessorie del Cranio dei Mammiferi e dell' Uomo. *Monit. Zool. Ital.* i, pp. 119-135 & 144-153, woodcuts.

Observations on accessory ossifications (Wurmian bones, etc.) in the crania of Mammals.

FILHOL, H. Études sur les Mammifères Fossiles des Sansan. *Bibl. haut. études*, xxxvi, art. i, 310 pp., 46 pls., and *Ann. Sci. Géol.* art. i, 320 pp., 46 pls.

A descriptive review of all the known Mammals from the Middle Miocene of Sansan. The evidence for the identity of *Macrotherium* and *Chalicotherium* is fully detailed. [See *Talpidæ*, *Viverridæ*, *Mustelidæ*, *Castoridæ*, and *Cervidæ*.]

— [See also *Lemuridæ*, *Soricidæ*, *Creodonta*, *Anoplotheriidæ*, and *Anthracotheriidæ*.]

FLEISCHMANN, A. [See *Rodentia*.]

FORSYTH-MAJOR, C. J. L'Ossario di Olivola in Val di Magra (Provincia di Massa Carrara). *P.-v. Soc. Tosc.* 1890, pp. 57-76. On a Pliocene Mammalian Fauna at Olivola. *Geol. Mag.* (3) vii, pp. 305-308.

After discussing previous observations on the Mammalian fauna and geological age of the deposits at Olivola, the author considers that they are Pliocene, and of the approximate age of those of the Val d'Arno. In the course of the notice reference is made to the Recorder's determination of *Hyæna striata* from the Red Crag and the Val d'Arno, which is regarded as insufficiently proved. *Palæoreas montiscaroli*, F. Maj., is identified with Aymard's *Antilope torticornis*, which should, therefore, be called *P. torticornis*. Notes are given on *Bos elatus*, Croizet, which is identified with *Leptobos strozzii*, Rüt., and referred to the latter genus, which is characterized by the absence of horns in the female.

FRIGERIO, F. [See *Hominidæ*.]

FUSARI, R., & PANASCI, A. Sulle Terminazioni nervose e sulle Ghian-dole sierose della Lingua dei Mammiferi. *Atti Ac. Tor.* xxv, pp. 835-857, pl. ix. [See also *Monit. Zool. Ital.* i, pp. 74 & 75.]

A detailed memoir on the terminations of the nerves and the structure of the serous glands of the tongue of Mammals.

GADOW, H. Description of the Modifications of certain Organs which seem to be Illustrations of the Inheritance of Acquired Characters in Mammals and Birds. Zool. Jahrb. Abth. f. Syst. v, pp. 629-646, illustr.

Pp. 639-641 treat of the larynx and sternum of *Mycetes*.

GAUDRY, A. Les Enchainements du Monde Animal dans les Temps Géologiques—Fossiles Secondaires. Paris: 8vo, 322 pp., illus.

Pp. 279-291 are devoted to the Mesozoic Mammals. [See also *Simiidae*, *Phocidae*, *Equidae*, and *Anthracotheriidae*.]

GERSTÄCKER, A. [See *Cetacea*.]

GILPIN, J. B. [See *Cetacea*.]

GRANDIDIER, A. Histoire Physique, Naturelle, et Politique de Madagascar. Vol. x. Hist. Nat. des Mammifères, by A. MILNE-EDWARDS & GRANDIDIER. Tom. v. Atlas II. Paris: 4to, pls. 123-172.

Contains plates illustrating the genus *Lemur*.

GRAY, R. W. [See *Delphinidae*.]

GREVÈ, C. [See *Carnivora*.]

GÜNTHER, A. [See *Bovidae*.]

HAACKE, W. Ueber die systematische und morphologische Bedeutung bisher unbeachtet gebliebener Borsten am Säugetierkopfe. Ber. Senck. Ges. 1890, pp. 175-184.

Describes and discusses the morphological significance of the tufts and pencils of bristles on the heads and faces of Mammals, and gives formulæ expressive of their relations and number in various groups.

—. Ueber Metamerenbildung am Säugetierkleide. *T. c.* pp. 185-187.

Discusses the relationship of the vertical stripes found in various Mammals to the vertebræ and ribs, and proposes the term "trichomerism" to express this relationship.

HAMBURGER, O. Ueber die Entwicklung der Säugethierniere. Arch. Anat. Phys. 1890, pp. 15-51, pls. iii & iv.

HELDERMAN, W. D. [See *Felidae*.]

HELM, F. [See MEYER.]

HENRY, A. [See *Bovidae*.]

HERRERA, A. L. Notas acerca de los Vertebrados del Valle de Mexico. Nat. Mex. i, pp. 299-342.

Includes notes on the Mammals of Mexico. [See also *Chiroptera*.]

HEUDE, P. Sur les Systèmes Dentaires des Mammifères. C.R. cx, pp. 1221-1223.

A remarkable paper, proposing new terms for some of the types of teeth presented by the *Ungulata* and some other orders.

HILL, E. S. [See *Leporidae*.]

HOCHSTETTER, F. Ueber die ursprüngliche Hauptschlagader der hinteren Gliedmasse des Menschen und der Säugethiere, nebst Bemerkungen ueber die Entwicklung der Endäste der Aorta abdominalis. Morph. JB. xvi, pp. 300-318, pl. xi. [See also *Rodentia*.]

HOFMANN, A. Ueber einige Säugethiere aus den Miocänen-schichten von Feisternitz bei Eibiswald in Steiermark. JB. geol. Reichsanst. xl, pp. 519-526, pl. iv.

Describes remains of *Amphicyon intermedius* (pl.), *Steneofiber jageri*, and *Hyotherium meissneri*.

HONEGGER, J. Vergleichend-anatomische Untersuchungen ueber den Fornix und die zu ihm in Beziehung gebrachten Gebilde im Gehirn des Menschen und der Säugethiere. Rec. Z. Suisse, v, pp. 201-434, pls. x-xix.

HORSLEY, V. [See *Primates*.]

HUBRECHT, A. L. W. [See *Soricidae*.]

HUET, P. Notes sur les Naissances obtenues à la Ménagerie du Muséum d'Histoire Naturelle dans le courant de ces Dernières Années. Bull. Soc. Acclim. xxxvii, pp. 873-884 & 930-939.

Records the Mammals born in the Paris Zoological Gardens during the last few years.

HUMPHREYS, J. [See *WINDLE*.]

ISSEL, A. Dei Fossili recentemente raccolti nella Caverna delle Fate (Finale). Ann. Mus. Genov. (2) ix, pp. 5-15, woodcut.

Mentions the Mammalian remains found, among which is a tooth of *Squalodon quaternarium* (figured).

JENTINK, F. A. On a Collection of Mammals from Billiton. Notes Leyd. Mus. xii, pp. 149-154, pl. vii, figs. 11-14.

The Mammals collected in the island of Billiton, between Borneo and Banka, comprise—1 *Tarsius*, 1 *Sciuropterus* (new), 3 *Sciurus*, 1 *Tupaia*, 1 *Rhinolophus*, 1 *Vesperugo* (new), 1 *Vespertilio*, and 1 *Emballonura*. [See *Sciuridae* and *Vespertilionidae*.]

—. On Two very rare, nearly forgotten, and often misunderstood Mammals from the Malayan Archipelago. T. c. pp. 222-230, pl. ix, figs. 1-4.

It is shown that *Pithechirus melanurus* is a true mouse, inhabiting Java and Sumatra, and has nothing to do with *Chiropodomys*. Skull and teeth figured. The remainder of the paper refers to *Tupaia dorsalis*. [See also WEBER, and *Bovidae*.]

KIRBY, W. F. Natural History of the Animal Kingdom for Young People. Part 1.—*Mammalia*. London: 4to, 24 pp., illustrated.

KOCHS, W. Ueber eine wichtige Veränderung der Körperbeschaffenheit welche der Mensch und die Säugetiere der gemässigten in heissen Klima erleiden. Biol. Centralbl. x, pp. 290-295.

KOLLMAN, J. Handskelett und Hyperdaktylie. Verh. Ges. Basel, viii, pp. 604-626, pl. viii.

The author concludes that the traces of a prepollex and prehallux observed in many Mammals are truly atavistic, and not pathological features. The term "Theromorphism" is suggested for these rudiments when they occur in man.

KÜKENTHAL, W. Ueber die Anpassung von Säugethieren an das Leben im Wasser. Zool. Jahrb. Abth. f. Syst. v, pp. 373-399.

The author traces the modifications induced in the structure of those Mammals which are of aquatic habits by this mode of life. It is considered that all aquatic Mammals are derived from land forms, and that their full adaptation to an aquatic existence depends partly on the extent to which they are aquatic, and partly on the length of time since they have adopted this mode of life. Particular attention is directed to the *Cetacea*; and it is held that their alleged direct descent from aquatic reptiles is totally untenable. The origin of "hyperphalangism" is accounted for by the development and subsequent separation of double epiphyses to the phalangeals. Attention is directed to the difference in the form of the pectoral limb in the *Odontoceti* and *Mystacoceti*; and from the generalised type of carpus in the former it is argued that these two groups are of dual origin. [See also *Cetacea*.]

KULCZCKI, W. [See *Equidae*.]

LANGKÄVEL, B. [See *Bovidae*.]

LATASTE, F. [See *Rodentia*.]

LECHE, W. [See *Marsupialia*.]

LEIDY, J. [See *Caviidae*, *Elephantidae*, *Equidae*, and *Rhinocerotidae*.]

LEMOINE, V. Étude sur les Rapports des Mammifères de la Faune Cernaysienne et des Mammifères Crétacés d'Amerique. Bull. Soc. Géol. (3) xviii, pp. 321-324, pl. iii; also C.R. cx, pp. 480-482.

The author points out the close resemblance between teeth from the Cernaysien beds of Rheims described by himself, and those from the Laramie Cretaceous described by Marsh. It is considered that some of those described by the latter, as *Halodon* and *Didelphodon*, are inseparable from *Plesiadapis*; *Cimolestes* is approximated to *Tricuspidon*; some of the teeth described as *Didelphodon*, *Pedionmys*, and *Halodon*, are compared with those of *Adapisorex*; while others, such as *Cimolomys*, *Cimolodon*, and *Tripiodon*, are regarded as closely allied to *Neoplagiaulax*.

—. Sur l'Age relatif des Mammifères de Cernay, par rapport aux Vertébrés du même groupe decouverts en Europe et en Amerique. *T. c.* pp. 219-223.

Another paper on the same subject.

—. Considérations Générales sur les Vertébrés Fossiles des Environs de Reims, et spécialement sur les Mammifères de la Faune Cernaysienne. C.R. Congrès Internat. Zool. 1889, pp. 233-279, woodcuts.

A third contribution to the same subject.

LENHOSSÉK, M. A. Gerinczvelői Idegek Hátulso Gyökereiről. (The Spinal-Cord and the Posterior Nerve-roots.) Ért. Term. Kör. xix, pt. 6, pp. 6 & 46, pl. i.

LEUTHARDT, T. [See *Ungulata*.]

LINK, J. A. Die Säugethiere der Hassberge und deren Umgebung. Ber. naturf. Ges. Bamberg, xv, pp. 3-25.

A review of the Mammalian fauna.

LYDEKKER, R. [See *Hyenidae*, *Mustelidae*, *Hyenodontidae*, *Bovidae*, and *Cervidae*.]

MACDONALD, T. F. [See *Equidae*.]

MACINTYRE, D. Hindu-Koh: Wanderings and Wild Sport on and beyond the Himalaya. Edinburgh & London: 1889, 8vo, 464 pp., illustrations. [Omitted from Zool. Rec. xxvi.]

Contains a sporting account, with illustrations of many of the larger Himalayan Mammals. Figures of the horns of the three varieties of *Capra falconeri* are given on p. 223.

MAGGI, L. Fontanelle nello Scheletro Cefalico di alcuni Mammiferi. Rend. Ist. Lombardo (2) xxiii, pp. 439-461 & 580-608, pls. vi-xi. [See also Boll. scient. xii, pp. 61 & 62.]

Describes and figures the cranial fontanelles in Apes, Pig, Sheep, Ox, &c. [See also *Rodentia*.]

MAHN, R. [See *Muridae*.]

MARSH, O. C. Notice of New Tertiary Mammals. Am. J. Sci. (3) xxxix, pp. 523-525.

Describes Mammalian remains from the Miocene of Dakota. Four new genera of *Perissodactyla* are founded; and a new species of *Hyopotamus* is described. [See *Anthracotheriidae*, *Titanotheriidae*, *Lophiodontidae*, and *Lambdotheriidae*.]

MARTIN, K. [See *Proboscidea*.]

MARTIN, P. [See *Felidae*.]

MAYET, V. [See *Castoridae*.]

MEARNS, E. A. [See *Rodentia*.]

MEEK, A. [See *Hystriidae*.]

MERRIAM, C. H. The North American Fauna (U.S. Department of Agriculture). No. 3. Results of a Biological Survey of the San Francisco Mountain Region and Desert of the Little Colorado, Arizona, pp. 1-136, pls. i-xii, maps.

This memoir (which also contains a section on Reptiles and Amphibians, by L. Stejneger) is a continuation of the paper quoted in Zool. Rec. xxvi, *Mamm.* p. 11. The Mammals described comprise a new species of *Sorex*, 1 species of *Vesperugo*, 3 of *Vespertilio*, one of which is new; 1 of *Nyctinomus*, 2 of *Sciurus*, 3 of *Tamias*, and a new variety of

the same; 3 of *Spermophilus*, of which one, as well as two varieties, are new; 1 of *Cynomys*, 1 of *Castor*; a new species and a new variety of *Onychomys*; 3 species of *Hesperomys*, of which one, as well as a variety, are new; 2 species of *Arvicola*, one of which is new; 1 species of *Neotoma*, and 2 of *Thomomys*. The new generic term *Dipodops* is proposed for those Kangaroo Rats having five hind toes, and one new species is named. There are 3 species of *Perognathus*, of which one is new; also 1 of *Erethizon*, 2 of *Lepus*, 1 of *Cariacus*, *Antilocapra*, *Ovis*, *Felis*, *Lynx* (new), *Canis*, *Mephitis* (new), *Spilogale* (new), *Taxidea*, *Lutra*, *Bassaris*, and 2 of *Ursus*. [See *Soricidæ*, *Vespertilionidæ*, *Sciuridæ*, *Muridæ*, *Geomyidæ*, *Felidæ*, and *Mustelidæ*.]

[MERRIAM, C. H.] The North American Fauna. No. 4. Descriptions of Twenty-six New Species of North American Mammals, 55 pp., 3 pls.

This fasciculus contains a revision of the genus *Spilogale*, with descriptions of six new species and one variety. 4 new species and one variety of *Tamias*. 3 new species of *Eutamias*. A new *Mustela*. A new *Molossus*, the first recorded from the United States. A new *Cynomys*. 1 new species and 2 varieties of *Spermophilus*. 3 new species of *Dipodomys*. 1 new variety of *Geomys*, and a new species of *Hesperomys*. [See *Mustelidæ*, *Sciuridæ*, *Muridæ*, *Geomyidæ*, and *Emballonuridæ*.]

MEYER, A. B. [See *Cercopithecidæ*, *Sciuridæ*, and *Muridæ*.]

—, & HELM, F. v. Jahresbericht (1889) der Ornithol. Beobachtungstationen im Königreich Sachsen. Dresden: 1890, 80 pp.

Pages 70–72 contains a list of the Mammals of Saxony.

MILNE-EDWARDS, A. Mission Scientifique du Cap Horn, 1882–1883, vol. vi, Zoologie—Mammifères, 32 pp., 8 pls. Paris: 1890, 4to.

The species described include *Felis geoffroyi*, *Canis magellanicus*, *Conepatus humboldti* (pls. i, viii), *Lutra chilensis*, *Otaria jubata*, *Arctocephalus australis*, *Hesperomys* (*Notiomys*) *edwardsi* (n. sp., pl. iii, fig. 1; pl. viii, fig. 1), *H. coppingeri* (pl. iv, fig. 2; pl. viii, fig. 2), *H. longicaudatus* (pl. iv, fig. 1), *H. olivaceus* (pl. v, fig. 1), *H. xanthorhinus* (pl. vi, fig. 1), *H. longipilis* (pl. v, fig. 2), *H. xanthopygus* (pl. vi, fig. 2), *Mus magellanicus*, *Rhithrodon chinchilloides* (pl. iii, fig. 2), and *R. cuniculoides* (pl. ii). [See *Muridæ*. See also GRANDIDIER, *suprà*, p. 6.]

MINOT, C. S. [See *Rodentia*.]

MIVART, ST. G. [See *Canidæ*.]

MONTANA, —. De la Dualité Anatomique et Fonctionnelle des Éléments des Glandes Gastriques. Bull. Soc. Toulouse, xxxiii, pp. 97–121.

A detailed series of observations made on the gastric glands of several of the larger Mammals, with deductions therefrom.

MORCELLI, E. [See *Primates*.]

NEHRING, A. Ueber Säugethiere der Philippinen, namentlich über *Phlaomys cumingi*, Waterh., and *Bubalus mindorensis*. SB. nat. Fr. 1890, pp. 101-108.

After mentioning the eight species of Mammals hitherto recorded from the Philippines, describes a new species or variety of *Phlaomys*, and considers that *Bubalus mindorensis* connects the Anoa with the true Buffalos. [See *Muridæ*.]

—. Ueber Tundren und Steppen der Jetzt und Vorzeit, mit besonderer Berücksichtigung ihrer Fauna. Berlin: 1890, 8vo, 257 pp., and map.

The first chapter describes the Tundras, or Arctic Steppes of the Old World, with a list of their fauna. In the second chapter the true Steppes of Russia and S.W. Siberia are treated of in a similar manner. In the third we have observations on the fauna and climate of the Glacial and Post-glacial epoch; while the fourth treats of the former wide range of Lemmings in Europe. The evidence for the existence of a climate like that of the Steppes and Tundras in Middle Europe during the Post-glacial epoch is detailed in the fifth and sixth chapters. The seventh gives a general summary of the author's views. [See also *Canidæ* and *Bovidæ*.]

NEWTON, E. T. On some New Mammals from the Red and Norwich Crags. Q. J. Geol. Soc. xlv, pp. 444-453, pl. xviii.

This paper contains descriptions of Mammalian remains from the English Pliocene belonging to eight species, nearly all being new to the Crags, and four of them new to science. A low-crowned lower carnassial tooth from the Norwich Crag of Bramerton is referred to the genus *Lutra*, and named *L. reevei*. All the other specimens are from the nodule-bed at the base of the Suffolk Red Crag. The right ramus of a lower jaw, differing from the common Otter in having the hinder fangs of the premolars much larger than the front ones, and agreeing in this particular with *L. dubia*, is referred to the latter species. A humerus of a Seal, most nearly resembling that of *Phoca vitulina*, but of smaller size and more slender proportions, is named *Phoca moori*. Another Seal's humerus, having a peculiarly triangular shaft, is thought to belong to *Phocanella minor* of Van Beneden. A maxilla with three teeth, belonging to the genus *Trogontherium*, but of smaller size than *T. cuvieri*, is believed to represent another species, and is named *T. minus*. The ziphioid rostrum in the Ipswich Museum, which received the preoccupied MS. name of *Mesoplodon floweri*, is described as *M. floris*; and another rostrum, characterized by being very short, with a deep boat-like anterior extremity, is named *M. scaphoides*. *Ælurus anglicus*, hitherto known only by part of a lower jaw with the carnassial tooth, is now further illustrated by an upper molar. [See *Phocidæ*, *Mustelidæ*, *Castoridæ*, and *Physeteridæ*. See also *Muridæ*.]

NUSSBAUM, J. [See *Rodentia*.]

O'REILLY, J. P. [See *Canidae*.]

OSBORN, H. F. A Review of the Cernaysian Mammals. P. Am. Phil. Soc. 1890, pp. 51-62, woodcuts.

The author endeavours to assign a definite position to the numerous Mammals described by Lemoine, from the Lower Eocene of Rheims. In noticing the general characters presented by this fauna, it is mentioned that the teeth are usually tritubercular, and that the astragalus is perforated. The genera, *Protoadapis* and *Plesiadapis* are referred to the primitive Lemuroids. Schlosser's reference of *Adapisorex*, *Adapisoriculus*, *Pleuraspidotherium*, and *Orthaspidotherium* to the *Insectivora* is confirmed; although the alleged relationship of the two latter to the *Erimacidae* is disputed. In the Creodont *Carnivora Hycenodictis* is provisionally referred to the *Mesonychidae*, while the tritubercular character of the molars of *Arctocyon* is pointed out for the first time. The paper concludes with a notice of *Neoplagiaulax*.

— [See also SCOTT, W. B.]

OTTO, A. Sur Geschichte der ältesten Haustiere. Breslau: 1890, 8vo, 78 pp.

A history of the domestic Mammals of Europe, divided into two parts. The first part gives a *résumé* of previous works and theories on the subject; while in the second we have a detailed account of each particular species.

OUDEMANS, A. C. [See *Cercopithecidae*.]

OUDEMANS, J. T. [See *Chiromyidae*.]

*PALADINO, G. Dei Primi Rapporti tra l'Embrione e l'Utero in Alcuni Mammiferi. Giorn. Assoc. Nat. Nap. i, pp. 1-15, pl., 1889. [See also Monit. Zool. Ital. i, p. 12.]

Observations on the relations of the foetal and maternal elements of the placenta, as exemplified in Rodents.

PANASCI, A. [See FUSARI.]

PARKER, W. K. [See *Equidae*.]

PATERSON, A. M. On the Fate of the Muscle-plate and the Development of the Spinal Nerves and Limb-Plexuses in Birds and Mammals. Stud. Biol. Lab. Owen's Coll. ii, pp. 103-122, pls. vii & viii. [Reprinted from Q. J. Micr. Sci. 1887.]

— The Development of the Sympathetic Nervous System in Mammals. P. R. Soc. xlvii, pp. 19-23. [Abstract.]

It is concluded that the Mammalian sympathetic is mesoblastic, that it is formed out of the cellular tissue surrounding the embryonal aorta, and is at first entirely independent of the cerebro-spinal system. It is primarily uniform and unsegmented. Subsequently it becomes connected with certain spinal nerves by growths from the latter, and in consequence becomes gangliated in an irregular manner.

PAVLOW, M. [See *Equidæ*.]

PELZELN, A. v. Geschichte der Säugethier- und Vogel-Sammlung des k. k. naturhist. Hofmuseums. Ann. Hofmuseum Wien. v, pp. 503-539.

The first part gives the history of the more important specimens of Mammals in the Vienna Museum.

PFITZER, —. [See *Canidæ*.]

POMEL, A. [See *Hippopotamidæ*.]

POMMEROL, F. [See *Equidæ*.]

POUCHET, G. [See *Cetacea*.]

REITTERER, E. Sur l'Origine et l'Évolution de Région Ano-Génitale des Mammifères. J. de l'Anat. Phys. xxvi, pp. 126-151 & 153-216, pls. v-viii.

— Du Développement de la Région Anale des Mammifères. C.R. Soc. Biol. (9) ii, pp. 51 & 54.

— Du Développement du Fourreau et de la Partie Libre de la Verge des Mammifères Quadrupèdes. T. c. pp. 551-554.

— Sur la Développement de la Portion Abdominal de la Verge des Mammifères. T. c. pp. 606-608.

— Note sur la Valeur Morphologique du Gland des Mammifères. Mém. Soc. Biol. 1890, pp. 107-114. [See also *Cetacea*.]

REUVENS, C. L. [See *Cercopithecida* and *Myoxida*.]

RISTORI, G. [See *Primates*.]

ROBINSON, A. On the Position and Peritoneal Relations of the Mammalian Ovary. Stud. Biol. Lab. Owen's Coll. ii, pp. 35-46, pl. iv. [Reprinted from J. Anat. Phys. 1887.]

RODLER, A. [See *Artiodactyla*.]

RÖSE, C. Beiträge zur vergleichenden Anatomie des Herzens der Wirbelthiere. Morph. JB. xvi, pp. 27-96, pls. iv & v.

Includes observations on the hearts of a large number of Mammals.

ROYER, A. [See *Artiodactyla*.]

RÜTIMEYER, L. Uebersicht der eocänen Fauna von Egerkingen. Verh. Ges. Basel, ix, pp. 1-34, woodcuts.

After giving a classified list of the known species from the Swiss Siderolites, the author proceeds to discuss the relations of this fauna with the faunas of the American Tertiaries, in the course of which he describes a cutting-tooth under the name of *Calumodon europæus*. [See *Tillodontia*.]

RUTLAND, J. [See *Muridæ*.]

RYDER, A. J. [See *Soricidæ*.]

SACCO, F. [See *Balenidae*.]

ST. LOUP, R. [See *Bovidae*.]

SCHACHT, H. [See *Carnivora*.]

SCHLOSSER, M. Die Affen, Lemuren, Chiropteren, Insectivoren, Marsupialier, Creodonten, und Carnivoren der Europäischen Tertiars, &c. Part III. Beitr. Pal. Oesterr.-Ung. viii, pp. [1-106] 387-492. [Plates with preceding part.]

The concluding part of the memoir noticed in Zool. Rec. xxv, *Mamm.* pp. 27 & 28. The first portion concludes the *Carnivora*; while a supplement gives emendations of some of the determinations made in the two preceding parts, with mention of species described since they were issued. There is also a complete distributional list of all the known European Tertiary Mammals. The part devoted to the *Carnivora* commences with the characters of the existing *Viverridae*, in which it is concluded that *Prionodon* and *Poiana* are the direct descendants of *Palæoprionodon*. In the survey of extinct Viverroids, one new species of the type genus is described, and *V. minima*, Filhol, is regarded as referable to this genus and not to *Herpestes*. The *Herpestinae* are raised to the rank of a family. In the *Procyonidae* there is a notice of *Ælurus anglicus*, and of the fossil American forms. In the *Hyænidae*, the new genus *Prohyæna* is proposed for *Ælurodon wheelerianus*, Cope, which is regarded as an ancestral Hyænoid. It is considered that *Hyænocyon* is certainly not a Canoid, but may be an Hyænoid. *Hyæna maculata* and the fossil *H. spelæa* are regarded as distinct from *H. crocuta*. In the *Felidae* there is a long discussion as to the origin and relationships of the family, followed by a description of the fossil forms. The genus *Didymictis*, Cope, is regarded as the representative of the *Creodonta Adaptiva*—a group connecting the true Creodonts with the typical Carnivores. This portion of the memoir concludes with a survey of the extinct American Carnivores described by Marsh, most of which are considered to be identical with Creodonts previously named by Cope. In the supplement the relation of *Cænopithecus* to *Adapis* is discussed, and it is considered that the jaw referred by Rüttimeyer to *Pelycodus* probably belongs to the former. The jaw from the Bohnerz of Frohnstetten, previously referred by the author to *Microchærus*, is made the type of the new genus *Cryptopithecus*, and is probably allied to *Hyopsodus*. *Microchærus* is transferred to the *Lemuridae*, and regarded as closely allied to *Necrolemur*. After some mention of additional fossil *Insectivora* and *Chiroptera*, the descriptive part concludes with references to Carnivores described since the earlier part of the text was in type, and with discussions on points of phylogeny, priority, &c. [See *Hyopsodontidae*, *Viverridae*, and *Canidae*.]

— Ueber die Modificationen des Extremistätenskelets bei den einzelnen Säugetier-Stämmen. Biol. Centralbl. ix, pp. 684-698 & 716-729.

A critical discussion of the modifications in the skeleton of the limbs of Mammals, exclusive of the *Edentata* and *Marsupialia*.

[SCHLOSSER, M.] Die Differenzierung des Säugetiergebisses. *Op. cit.* x, pp. 238-252 & 264-277, woodcuts.

The first part treats of the evolution of the more complex forms of Mammalian molars from the tritubercular type; while the second is devoted to the modifications in the number and functions of the teeth in the various orders.

— Ueber die Deutung des Milchgebisses der Säugetiere. *T. c.* pp. 81-92.

Criticizes the conclusions of O. Thomas as to the homology of the teeth in various groups of Mammals, and especially disputes the view that the milk-dentition is a series superadded to the permanent one. It is also urged that the anterior cheek-teeth of *Elephas* are not milk but premolars. [For a criticism, see O. THOMAS, p. 17.]

SCHULZE, E. Verzeichniss der Säugethiere von Sachsen, Anhalt, Braunschweig, Hannover, und Thüringen. *Z. Nat.* lxiii, pp. 97-112.

SCLATER, P. L. [See *Rhinocerotidæ* and *Bovidæ*.]

SCLATER, W. L. [See *Muridæ*, *Dipodidæ*, and *Artiodactyla*.]

SCOTT, W. B. [See *Cotylopidae*.]

—, & OSBORN, H. F. Preliminary Account of the Fossil Mammals from the White River and Loup-Fork Formations, contained in the Museum of Comparative Zoology. Part II. *Bull. Mus. C. Z.* xx, pp. 65-100, 3 pls., woodcuts.

A valuable memoir, reviewing and completing the work done on the *Carnivora*, *Artiodactyla* and *Perissodactyla*; the two first groups being described by Scott, and the third by Osborn. In the *Carnivora*, the first section is devoted to *Ælurodon*, from which it is considered that Schlosser's *Prohyæna* (misquoted *Palhyæna*) is inseparable. In the *Felidæ* a humerus is provisionally ascribed to a large species of *Felis*, under the name of *F. maxima*; the reason for referring it to that genus rather than to *Machærodus* (*Smilodon*), being the presence of an entepicondylar foramen, which is absent in *M. (S.) necator*. In the *Artiodactyla*, *Merychys* is shown to differ from other Creodonts by having the fourth upper milk-molar with four crescents, like that of the *Pecora*, whereas in most other members of the family it is triangular, as in the *Tragulina*. The foot-structure is also of the "adaptive" type. *Merycochærus* has a similar type of foot. Important observations are made on the skeletons and general structure of *Blastomeryx* and *Cosoryx*, which are shown to be true Ruminants, and are referred to the family *Gelocidæ*. The former is shown to be closely allied to *Palæomeryx*, from which it is mainly distinguished by the absence of the characteristic fold in the lower molars. It was probably an ancestor of the true American Deer. *Cosoryx* is regarded as very closely allied to *Blastomeryx*, but has a more hypsodont dentition and forked antlers, which were probably not deciduous, and covered with skin. Cope's suggestion that *Cosoryx* may have given rise to *Antilocapra* is considered probable, since the forked horn-sheaths of

the latter point to an original forking of the bony cores. In the *Perissodactyla*, *Meshippus* is regarded as distinct from *Anchitherium*, which is made the type of a family. Among the *Rhinocerotidae* some observations are made on the foot-structure of *Aceratherium*, and on the homology of the component parts of the Rhinoceros molar. A restoration is given of the skeleton of one of those Upper Miocene Rhinoceroses described as *Aphelops*, and is shown to be remarkable for the length of the body and the shortness of the limbs, whereby it presents a marked contrast to the long-limbed *Aceratherium* of the Lower Miocene. The ordinal term *Chalicotheroidea* is adopted for *Chalicotherium*; and Marsh's *Moropus* is identified with that genus.

SELENKA, E. [See *Primates*.]

SELOUS, F. C. A Hunter's Wanderings in Africa. 2nd Ed. London: 1890, 8vo, 455 pp., illustrated.

SHERBORN, C. D. [See *WOODWARD*.]

SHERRINGTON, C. S. On outlying Nerve-cells in the Mammalian Spinal Chord. P. R. Soc. xlvii, pp. 144-146. [Abstract.]

SIEPI, P. [See *Chiroptera*.]

SOUTHWELL, T. [See *Cetacea*.]

SPEE, F. G. Die Verschiebungsbahn des Unterkiefers am Schädel. Arch. Anat. Phys. 1890, pp. 285-294, pl. xvi.

The relationship of the mandible to the cranium illustrated in a large number of Mammals.

SPITZKA, E. C. [See *Pinnipedia*.]

STEEL, J. H. [See *Equidae* and *Bovidae*.]

STEERE, J. B. A List of the Birds and Mammals collected by the Steere Expedition to the Philippines. Ann Arbor, Michigan, 8vo, 30 pp.

22 species of Mammals are recorded, of which a Bubaline and two Squirrels are described as new. [See *Sciuridae* and *Bovidae*.]

STEPHENS, F. Land Mammals of San Diego County, California. West Am. Scientist, vii, pp. 36-39.

62 species are mentioned.

STERNBERG, M. Ein bisher nicht beschriebener Canal im Keilbein des Menschen und mancher Säugethiere. Arch. Anat. Phys. 1890, pp. 304-331, pl. xvii.

Describes a canal in the alisphenoid, for which the name *canalis cranio-pharyngensis lateralis* is proposed.

STRAHL, H. Untersuchungen ueber den Bau der Placenta. Der Bau der Hundplacenta. Arch. Anat. Phys. 1890, pp. 186-203, pls. ix & x.

—. Die histologischen Veränderungen der Uterusepithelium in der Raubthierplacenta. Op. cit. suppl. pp. 120-134, pls. vi & vii. [See also *Talpidae*.]

SUCHETET, A. [See *Ungulata*.]

THOMAS, O. On a Collection of Mammals from Central Vera Cruz, Mexico. P. Z. S. 1890, pp. 71-76, pls. vi & vii.

The collection includes 21 species. A new variety of *Sciurus* and a new species of *Lepus* are described and figured. [See *Sciuridæ* and *Leporidæ*.]

——. On a Collection of Mammals obtained by Dr. Emin Pasha in Central and Eastern Africa. T. c. pp. 443-450, pl. xl, woodcut.

The collection includes 33 species, among which is an example of the rare *Rhynchocyon petersi*. An important correction is made in regard to the dental formula of the *Macroscelididæ*; a new variety of *Sciurus pyrrhopus* is described and figured. In the *Spalacidæ* the new name *Myoscalops* is proposed, to replace the preoccupied term *Heliophobius*. [See *Macroscelididæ*, *Sciuridæ*, and *Spalacidæ*.]

——. Remarks on Dr. Schlosser's "Ueber die Deutung des Milchgebisses der Säugetiere." Biol. Centralbl. x, pp. 216-219.

A criticism of the paper quoted on page 15. The author denies that he has ever expressed any opinion as to the serial homology of the first cheek-tooth of the dog, and strongly insists that the anterior cheek-teeth of the elephant belong to the milk-dentition. [See also *Sciuridæ* and *Edentata*.]

THOMPSON, D'ARCY W. [See *Cetacea* and *Marsupialia*.]

TORNIER, G. Die Phylogense des terminalen Segmentes der Säugethier-Hintergliedmassen. Morph. JB. xvi, pp. 401-483, pls. xvii & xviii.

An elaborate memoir, continuing an early one, and treating in detail of the modifications of the ankle-joint in various groups of Mammals.

TOULA, F. Ueber Säugethierresten gesammelt bei Gelegenheit des Baues der Eisenbahn von Scutari nach Ismid im 1873. Anz. Ak. Wien. xxvii, pp. 112-114.

A preliminary notice of a series of Mammalian remains collected in Turkey. The specimens come nearest to *Mastodon pandionis*, *Elephas clifti*, *Rhinoceros blanfordi*, *Hipparion antilopinum*, and *Equus nomadicus*.

TOURNEUX, F. [See *Felidæ*.]

TROUESSART, E. Les Mammifères fossiles de la République Argentine. Le Nat. 1890, pp. 151, 152, 203-205, 213, 214, 271, & 272, woodcuts.

Gives an illustrated summary of part of the great work of Ameghino [see Zool. Rec. xxvi, *Mamm.* p. 2] on the Mammals of Argentina; and also some observations on the *Multituberculata* from the paper by Ameghino quoted under that head.

——. Nouvelles Explorations des Gîtes fossilifères de la Patagonie australe. Rev. Sci. xlii, pp. 506 & 507.

Publishes a letter from C. Ameghino giving the results of some of his recent discoveries of the Tertiary Mammals of Patagonia. It is stated that *Protoxodon* and allied forms have but three digits on the fore (as on

the hind) foot, and it is therefore presumed that the same holds good for the later *Toxodon*. It is also shown that in *Proterotherium* the orbits were completely closed; the feet were tridactyle, with an artiodactyle type of tarsus; while in the dentition there were one pair of upper and two of lower incisors, the upper ones taking the form of canines, which were wanting. One new generic and several specific names are mentioned, but these can scarcely be regarded as entitled to be quoted as such.

TRUE, F. W. [See *Ungulata*, *Bovidae*, and *Delphinidae*.]

TUCKERMANN, F. On the Gustatory Organs of some of the *Mammalia*.

J. Morph. iv, pp. 151-193; and P. Bost. Soc. xxiv, pp. 470-482.

Describes in detail the taste-organs of 29 species of Mammals, ranging from Marsupials to Monkeys. The paper concludes with some general remarks, fuller deductions being reserved for a future occasion.

TYRRELL, J. B. Catalogue of the *Mammalia* of Canada, exclusive of the *Cetacea*. P. Canad. Inst. vii, pp. 66-91.

WEBER, M. Zoologische Ergebnisse einer Reise in Niederländisch Ost-Indien. Leyden: 1890, 8vo, illustrated.

Pp. 93-130 and pls. viii-xi are devoted to the *Mammalia*; the Rodents, Insectivores, and Bats being described by F. A. JENTINK, and the remaining forms by WEBER. The latter writer (pp. 107 & 108) considers that the Monkey named *Macacus ochreatus*, Ogilby, is merely a variety of *M. maurus*, Cuv., both varieties being found living together in Celebes, and the species being confined to that island. Jentink describes 1 new *Sciurus*, 1 *Mus*, 3 *Crocidura*, and 1 *Cerivoula*. [See *Sciuridae*, *Muridae*, *Soricidae*, and *Vespertilionidae*.]

WEITHOFER, K. A. [See *Proboscidea* and *Artiodactyla*.]

WHITE, T. [See *Canidae*.]

WINDLE, B. C. A. [See *Canidae*.]

WINCZA, H. [See *Artiodactyla*.]

WOLDŘICH, J. N. Diluviale Europäisch-Nordasiatische Säugethierfauna, und ihre Beziehungen zum Menschen. Mém. Ac. Petersb. (7) xxxv, No. 10 (1887), pp. 4 & 162. [Omitted from Zool. Rec. xxiv.]

Gives a list of the known Pleistocene Mammals of Europe and Siberia, followed by a discussion as to the relation of Man to that epoch, and concluding by observations on its climate.

——. Ueber die Diluviale Fauna der Höhlen bei Beraun in Böhmen. Verh. geol. Reichsanst. 1890, pp. 290-292.

WOLLEMAN, A. Einige Wörter zur Entgegnung auf Nehring; "Ueber der Character der Quatärfauna von Thiede bei Braunschweig." Verh. Ver. Rheinl. (5) vi, pp. 1-16.

A further contribution to the dispute as to the nature of the climate indicated by the Pleistocene Mammalian fauna of Brunswick.

WOODHEAD, G. S. [See *Delphinidae*.]

WOODWARD, A. S. [See *Bovidae*.]

— & SHERBORN, C. D. A Catalogue of British Fossil *Vertebrata*.
London: 1890, 8vo, 396 pp.

Pp. 311–394 are devoted to Mammals.

WOODWARD, H. A Guide to the Exhibition Galleries of the Department
of Geology and Palæontology. Part I. Fossil Mammals and Birds.
London: 1890, 8vo, 96 pp., woodcuts.

WUNDERLICH, L. [See *Otariidae*.]

ZAROUDNOÏ, N. Recherches Zoologiques dans le Contrée Trans-Cas-
pienne. Bull. Mosc. 1890, pp. 288–315.

The Mammals recorded are: *Rhinolophus*, sp., *Felis tigris*, *F. caracal*,
F. manul, *Lutra vulgaris*, *Canis aureus*, *Spermophilus leptodactylus*, *Mus*
wagneri, *Cervus maral*, and *Sus scrofa*.

ZICHEN, T. Zur Vergleichenden Anatomie der Hirnwindungen mit
specieller Berücksichtigung der Gehirne von *Ursus maritimus* und
Trichechus rosomarus. Anat. Anz. v, pp. 692–709, woodcuts.

Observations on the homology and structure of the convolutions and
sulci of the brain, with especial reference to the two species mentioned.

ZSIGMONDY, O. [See *Hominidae*.]

II.—FAUNAS.

A.—RECENT.

Europe. See NEHRING, p. 11; LINK, p. 9 (Germany); MEYER & HELM,
p. 10 (Saxony); SCHULZE, p. 15 (Saxony); ZAROUDNOÏ, *suprà* (Russia).

Central Asia. See BÜCHNER, p. 31.

China. See BÜCHNER, p. 3.

Manchuria. See DATTAN, p. 4.

Africa. See BOCAGE, p. 3 (West); THOMAS, p. 17 (East and Central).

Malayana. See JENTINK, p. 7; WEBER, p. 18.

Philippines. See NEHRING, p. 11; STEERE, p. 16.

N. America. See ALLEN, p. 2; COCKERELL, p. 4; HERRERA, p. 6;
MERRIAM, p. 9; STEPHENS, p. 16; THOMAS, p. 17; TYRRELL, p. 18.

W. Indies. See FEILDEN, p. 5.

B.—FOSSIL.

Europe. See NEWTON, p. 11 (England); DEPÈRET, p. 4 (France);
DONNEZAN, p. 4 (France); FILHOL, p. 5 (France); LEMOINE, p. 8
(France); ALMERA & BOFILL, p. 2 (Spain); RÜTIMEYER, p. 13 (Switzer-
land); CARAZZI, p. 3 (Italy); FORSYTH-MAJOR, p. 5 (Italy); ISSEL, p. 7

(Italy); HOFMANN, p. 7 (Styria); NEHRING, p. 11; SCHLOSSER, p. 14; WOLDRICH, p. 18; TOULA, p. 17 (Turkey).

North America. See SCOTT & OSBORN, p. 15.

South America. See AMEGHINO, p. 50; TROUËSSART, p. 17.

III.—SPECIAL STRUCTURES, DEVELOPMENT, &c.

ABNORMALITIES.

Foot.—See BOAS, *Artiodactyla*; PFITZNER, *Canidæ*.

Skull.—See FRIGERIA, *Hominidæ*.

Teeth.—See MIVART, *Canidæ*.

Circulatory System.—See HILL, *Leporidae*; KULCZYCKI, *Equidæ*.

COLORATION.—See ALLEN, *Sciuridæ*; HAACKE, p. 6.

DENTITION.—See CALDERON, *Rodentia*; HEUDE, p. 6; MAKI, *Muridæ*; MIVART, *Canidæ*; SCHLOSSER, p. 15; THOMAS, p. 17; WINDLE & HUMPHREYS, *Canidæ*.

DEVELOPMENT & EMBRYOLOGY.—See BIANCHI, p. 3 (foetal membranes); BIEHRINGER, *Rodentia* (germinal membranes); DUVAL, p. 4, and *Rodentia* (placenta); HAMBURGER, p. 6 (kidney); HOCHSTETTER, *Rodentia* (arteries); HUBRECHT, *Soricidæ* (germinal layers); LECHIE, *Marsupialia*; MARTIN, *Felidæ* (retina); MINOT, *Rodentia* (placenta); NUSSBAUM, *Rodentia* (placenta); PALADINO, p. 12 (placenta, &c.); PATERSON, p. 12 (nerves); RETTERER, p. 13 (anal and urino-genital organs); SELENKA, *Primates*; STRAHL, p. 16, and *Tulpidæ* (placenta).

DIGESTIVE SYSTEM.—BOAS, *Artiodactyla* (stomach); MONTANA, p. 10 (glands); THOMPSON, *Marsupialia* (viscera); TOURNEUX, *Felidæ* (intestine), TUCKERMANN, p. 18 (gustatory organs); WOODHEAD & GRAY, *Cetacea* (stomach).

EYE.—See MARTIN, *Felidæ*; RYDER, *Soricidæ*.

LARYNX.—See THOMPSON, *Cetacea*.

MORPHOLOGY.—See BARDELEBEN, p. 2 (prepollex); BROOM, p. 3 (quadrate); CARLSSON, p. 4 (prepollex); EMERY, p. 5 (manus and pes); GADOW, p. 6; HOCHSTETTER, p. 7 (limbs); KOLLMAN, p. 8 (manus); LEUTHARDT, *Ungulata* (foot); MAGGI, p. 9 (cranial fontanelles); SCHLOSSER, p. 15 (limb-skeleton); TORNIER, p. 17 (ankle-joint).

MUSCLES.—See BARDELEBEN, p. 2; CARLSSON, p. 4; OUDEMANS, *Chiromyidæ*.

NERVES, BRAIN, &c.—See BEEVOR, *Hapalidæ* (brain); BEEVOR & HORSLEY, *Primates*; CIACCIO, p. 4; FUSARI & PANASCÈ, p. 5 (tongue); HONEGGER, p. 7 (fornix); LENHOSSÉK, p. 9; PATERSON, p. 12; SHERINGTON, p. 16; ŠPÍTZKA, *Pinnipedia* (brain); ZICHEN, p. 19 (cerebral convolutions).

OSTEOLOGY.—See BOAS, p. 42 (*Artiodactyle* foot); FICALBI, p. 5 (cranium); KÜKENTHAL, *Cetacea*; LEUTHARDT, *Ungulata* (foot);

MANIGAULT, *Chinchillidæ*; STERNBERG, p. 16 (cranium); WINCZA, *Artiodactyla* (clavicle); WINDLE & HUMPHREYS, *Canidæ*.

URINO-GENITAL ORGANS.—See HAMBURGER, p. 6 (kidney); MEEK, *Hystriidæ*; RETTERER, p. 13, and *Cetacea* (penis); ROBINSON, p. 13 (ovary).

VASCULAR SYSTEM & HEART.—HILL, *Leporidæ* (abnormal vein); HOCHSTETTER, *Rodentia* (development of artery); KULCZYCKI, *Equidæ* (abnormal artery); RÖSE, p. 13 (heart).

IV.—SPECIAL WORK.

(*Extinct genera and species are indicated by a †.*)

1.—PRIMATES.

ANTHROPOIDEA.

BEEVOR, C. E., & HORSLEY, V. An Experimental Investigation into the Arrangement of the Excitable Fibres of the Internarial Capsule of the Bonnet Monkey (*Macacus sinicus*). P. R. Soc. xlvii, pp. 21 & 22. [Abstract.]

*MORSELLI, E. Sulla Fossetta Vermiana nei Primati. Atti Soc. Ligust. i, fasc. 2. [See Monit. Zool. Ital. i, pp. 142 & 143.]

Observations on the vermian fossa in the higher Apes; the fossa so-called being one in the middle line of the basioccipital, first described by Albrecht.

RISTORI, G. Le Scimmie Fossili Italiane. Boll. Com. Geol. (3) i, pp. 178–199 & 226–237, pls. vii & viii.

The first part describes and figures a number of remains of *Oreopithecus* from the Middle Miocene of Monte Bamboli. In discussing the affinities of the genus it is shown that while presenting a number of features, such as the length of the dental series, and the form and elongation of the last molar, especially the lower one, with the *Cercopithecidæ*, as represented by *Cynocephalus* and *Semnopithecus*; yet there are many points of affinity with the *Simiidæ*. Some of the best marked of the latter points are the shortness of the face and rounding of the chin, the diagonal arrangement and tendency to separation of the tubercles of the molars, and the approximation in the shape of the premolars to the molars. It is concluded that the genus should probably be regarded as representing an ancestral type of the *Simiidæ*. The second part of the paper treats of *Semnopithecus monspessulanus*; while the third part is devoted to *Macacus (Inuus) florentinus*. This species was originally described as the type of the genus *Aulaxinus*; the later *Macacus ausonianus*, F. Major, being a synonym.

SELENKA, E. *Zur Entwicklung der Affen.* SB. Ak. Berlin, 1890, pp. 1257-1262.

A preliminary notice of the author's researches on the development of several species of Apes.

a. HOMINIDÆ.

L. FRIGERIO, *Rend. Ist. Lombardo* (2) xxiii, p. 609, describes and figures a human skull having a triple mastoid process.

ZSIGMONDY, O. Ueber die Veränderungen des Zahnbogens bei der Zweiten Dentition. *Arch. Anat. Phys.* 1890, pp. 367-390, pls. xxi & xxii.

Illustrates the change in form of the human jaw, with the development of the permanent dentition

b. SIMIIDÆ.

GAUDRY, A. *Le Dryopithèque.* *Mém. Soc. géol.—Pal.* vol. i, art. 1, 11 pp., 1 pl. Also C.R. cx, pp. 373-376.

Describes and figures a nearly complete mandible of *Dryopithecus fontani*, which shows that this Anthropoid is the most generalized type yet known, instead of being, as was previously supposed, the most specialized. Figures of the mandibles of the Gorilla, Chimpanzee, and Man are given for comparison.

c. CERCOPITHECIDÆ.

OUDEMANS, A. C. Ueber zwei seltene und eine neue Art Affen des Zoologischen Gartens in Haag, Holland. *Zool. Gart.* xxxi, pp. 266-269.

Notices *Macacus nemestrinus*, var. *leoninus*, *Cercopithecus erythrarchus*, and a new species of the latter genus (*infra*).

REUVENS, C. L. On *Cercopithecus talapoin*, Erxleben. *Notes Leyd. Mus.* xii, pp. 41-46, pl. ii.

Shows that the generic separation of this species as *Miopithecus* is not warranted. Figures skull and dentition.

Cercopithecus aterrimus, n. sp., A. C. OUDEMANS, *l. c.* 267 & 268, Stanley Falls.

Cercopithecus wolffi, n. sp., A. B. MEYER, *Notes Leyd. Mus.* xiii, pp. 63 & 64, Central W. Africa.

Macacus ochreatus is identified by WEBER (*suprà*, p. 18) with *M. maurus*.

Colobus ferrugineus figured by P. L. SCLATER, *P. Z. S.* 1890, pl. xlviii.

†*Dolichopithecus rusciniensis* described and figured by C. DEPÉRET, *suprà*, p. 4.

d. HAPALIDÆ.

BEEVOR, C. E. On the Course of the Fibres of the Cingulum and the Posterior Parts of the Corpus Callosum and of the Fornix in the Marmoset Monkey [*Hapale*]. P. R. Soc. xlviii, pp. 271-273. [Abstract.]

LEMUROIDEA.

e. LEMURIDÆ.

For illustrations of the Madagascar forms, see GRANDIDIER, *suprà*, p. 16.

†*Microcherus* transferred by SCHLOSSER, *t. c.* (*suprà*, p. 14), pp. 65 & 66, to this group.

†*Necrolemur parvulus*, n. sp., H. FILHOL, Bull. Soc. Philom. (8) ii, pp. 39 & 40, woodcut, Quercy Phosphorites.

f. CHIROMYIDÆ.

OUDEMANS, J. F. Beiträge zur Kenntniss der *Chiromys madagascariensis*. Verh. Ak. Amst. xxvii, art. 2, pp. 1-3, pls. i-iii.

A description of the myology, neurology, &c, of *Chiromys*.

g. HYOPSODONTIDÆ.

†*Cryptopithecus siderolithicus*, n. g. & sp., M. SCHLOSSER, *t. c.* (*suprà*, p. 14), p. 451, pl. iv, figs. 55, 60, 62, Bohnerz, Frohnstetten.

2. CHIROPTERA.

ALLEN, J. A. Notes on a Small Collection of West Indian Bats, with description of an apparently New Species. Bull. Am. Mus. Nat. Hist. iii, pp. 169-173.

Eight species are noticed, of which one *Artibeus* is new [see *Phyllostomatidæ*].

BALLOWITZ, E. Ueber das Vorkommen des *Miniopterus schreibersii*, Natterer, in Deutschland, nebst einigen Bemerkungen ueber die Fortpflanzung Deutscher Chiropteren. Zool. Anz. xiii, pp. 531-536.

HERRERA, A. L. Nota adicional á los Queirópteros de México. Nat. Mex. i, pp. 298 & 299.

Gives the characters of 7 genera of *Phyllostomatidæ*.

SIEPI, P. Liste des Chiroptères observés dans les Départements des Bouches-du-Rhone et du Var. C.R. Congrès Internat. Zool. 1889, pp. 52-58.

I. MEGACHIROPTERA.

a. PTEROPODIDÆ.

ALLEN, H. On the Distribution of the Colour-Marks in the *Pteropodulæ*.
P. Ac. Philad. 1890, pp. 12-30.

A detailed comparison of the coloration of the various species.

Pteropus lanigera, n. sp., H. ALLEN, P. Am. Phil. Soc. xxviii, pp. 70-72,
Samoan Is.

II. MICROCHIROPTERA.

b. VESPERTILIONIDÆ.

Vesperugo vordermanni, n. sp., F. A. JENTINK, Notes Leyd. Mus. xii,
pp. 152-154, Billiton (off Borneo).

Atalapha semota, n. sp., F. W. TRUE, by H. ALLEN, P. U. S. Nat. Mus.
xiii, pp. 173-175, Sandwich Is.

Vespertilio melanorhinus, n. sp., C. H. MERRIAM, *t. c.* (*suprà*, p. 9),
No. 3, pp. 46 & 47, San Francisco.

Vespertilio velifer, n. sp., J. A. ALLEN, Bull. Am. Mus. Nat. Hist. iii,
pp. 177 & 178, Mexico.

Vespertilio neglectus, n. sp., V. FATIO, Arch. Sci. Nat. xxiv, pp. 509-512,
Switzerland.

Cerivoula weberi, n. sp., F. A. JENTINK, in Weber's Zool. Ergeb.
(*suprà*, p. 18), pp. 129 & 130, pl. xi, Celebes.

c. EMBALLONURIDÆ.

Nyctinomus europs, n. sp., H. ALLEN, P. U. S. Nat. Mus. xii, pp. 635-
638, Brazil.

Nyctinomus orthotis, n. sp., ALLEN, *t. c.* pp. 638-640, Jamaica.

Molossus californicus, n. sp., C. H. MERRIAM, *t. c.* (*suprà*, p. 10),
No. 4, pp. 31 & 32, California.

d. PHYLLOSTOMATIDÆ.

Curolia castanea, n. sp., H. ALLEN, P. Am. Phil. Soc. xxviii, pp. 19-26,
Costa Rica. This paper also has remarks on *C. brevicauda* and other
genera of the family.

Macrotus bulleri, n. sp., H. ALLEN, *t. c.* pp. 72-74, Mexico.

Artibeus coryi, n. sp., J. A. ALLEN, Bull. Am. Mus. Nat. Hist. iii, p. 173,
W. Indies.

3. INSECTIVORA.

DOBSON, G. E. Monograph of the *Insectivora*. Pt. III, fasc. 1. London :
4to, pls. xxiii-xxviii.

This fasciculus contains only plates and their description.

a. TUPAIIDÆ.

Tupaia dorsalis, see JENTINK, *suprà*, p. 7.

The name *Galerix* is substituted by FILHOL, *suprà*, p. 5, for *Parasorex*.

b. MACROSCELIDIDÆ.

It is shown by O. THOMAS (*suprà*, p. 17) that there are four premolars and two molars in the genera of this family ; two species of *Macrosclides* having, however, a minute third lower molar.

c. SORICIDÆ.

DOBSON, G. E. A Synopsis of the Genera of the Family *Soricidæ*. P. Z. S. 1890, pp. 49-51.

In the dentition, the canine tooth is reckoned as the first premolar. The following genera are recognized and defined, viz. :—*Sorex*, *Soriculus*, *Blarina*, *Notiosorex*, *Crossopus*, *Myosorex*, *Crocidura*, *Diplomesodon*, *Anurosorex*, *Chimarrogale*, and *Nectogale*.

HUBRECHT, A. A. W. Studies in Mammalian Embryology, II. The Development of the Germinal Layers in *Sorex vulgaris*. Q. J. Micr. Sci. (2) xxxi, pp. 499-562, pls. xxxvi-xlii.

An elaborately detailed memoir, with critical and full biographical notices.

RYDER, A. J. The Eye, Ocular Muscles, and Lachrymal Glands of the Shrew-mole (*Blarina talpoides*, Gray). P. Am. Phil. Soc. xxviii, pp. 16-18.

Among other points, the writer directs particular attention to the slight attachment of the eye-ball, the ocular muscles apparently having no connection with the cranium.

Sorex unguiculatus, n. sp., G. E. DOBSON, Ann. N. H. (6) v, pp. 155 & 156, woodcut, Saghalien Is., and mouth of Amur River.

Sorex monticolus, n. sp., C. H. MERRIAM, t. c. (*suprà*, p. 9), No. 3, pp. 43 & 44, woodcut of dentition, San Francisco.

Crocidura lasiura, n. sp., G. E. DOBSON, Ann. N. H. (6) v, pp. 31-33, woodcut, Amur region.

Crocidura nana, n. sp., DOBSON, t. c. p. 225, Somali-land.

Crocidura strauchi, n. sp., DOBSON, t. c. pp. 225 & 226, Sudan.

Crocidura macrodon, n. sp., DOBSON, t. c. pp. 226 & 227, Africa.

Crocidura grayi, n. sp., DOBSON, op. cit. vi, pp. 494 & 495, Phillipines.

Crocidura petersi, n. sp., DOBSON, t. c. pp. 495 & 496, W. Africa.

Crocidura martensi, n. sp., DOBSON, t. c. p. 496, Cape of Good Hope.

Crocidura pilosa, n. sp., DOBSON, t. c. pp. 496 & 497, Transvaal.

Crocidura weberi, n. sp., F. A. JENTINK, in Weber's Zool. Ergeb. (*suprà*, p. 18), pp. 123 & 124, Sumatra.

Crocidura orientalis, n. sp., JENTINK, t. c. p. 124, Java.

Crocidura brevicaudata, n. sp., JENTINK, *t. c.* pp. 124 & 125, Java.

†*Necrosorex quercyi*, n. g. & sp., H. FILHOL, Bull. Soc. Philom. (8) ii, pp. 174 & 175, Quercy Phosphorites.

d. TALPIDÆ.

STRAHL, H. Ueber den Bau der Placenta von *Talpa europæa*, und ueber Placentardrüsen. Anat. Anz. v, pp. 362-365.

√†*Myxomygale antiqua*, n. g. & sp., H. FILHOL, Bull. Soc. Philom. (8) ii, pp. 176 & 177, Quercy Phosphorites.

†*My[o]gale antiqua*, n. sp., FILHOL, Bibl. haut. études, xxxvi, 1, p. 26, Miocene, Sansan.

†*Talpa primæva*, n. sp., FILHOL, *t. c.* p. 35, *ibid.*

4. CARNIVORA.

For the European Tertiary *Viverridæ*, *Hyænidæ*, and *Felidæ*, see SCHLOSSER, *suprà*, p. 14. For placentation, see STRAHL, *suprà*, p. 16.

BRÉZOL, H. Les Carnivores Américaines. Bull. Soc. Aclim. xxxvii, pp. 49-55.

A brief semi-popular account of the American Carnivores.

I. CARNIVORA VERA.

GREVÉ, C. Die Geographische Verbreitung der Hyænidien und Caniden. Zool. Jahrb.-Abth. f. Syst. v, pp. 400-424, pls. xxxi-xxxiv.

A detailed description of the distribution of the existing species of *Canidæ* and *Hyænidæ*, with explanatory maps.

SCHACHT, H. Die Raubsäugetiere des Teutoburger Waldes. Zool. Gart. xxxi, pp. 166-171, 242-245, 304-309, & 357-363.

A continuation of previous papers. Treats of *Mustela martes*, *M. foina*, *M. putorius*, and *M. erminea*.

a. FELIDÆ.

FABRINI, E. I *Machairodus* (*Meganthereon*) del Valdarno Superiore. Boll. Com. Geol. (3) i, pp. 121-144 & 161-176, pls. iv-vi.

In this memoir on the remains of *Machairodus* from the Val d'Arno, the author shows that two forms have been included under the name of *M. cultridens*. In that species the upper canine is long and narrow, with smooth fore-and-aft edges; the smaller skulls described as *M. meganthereon* would appear to be the female of this species. In another type, for which the name *M. crenatidens* is proposed, the upper canine is strongly serrated on both edges, and is comparatively short and broad; the lateral surface of the mandible against which this tooth is applied

being likewise very broad. The mandible from the Forest-bed, described by Backhouse, is referred to this species. A third type—*M. nestianus*—is distinguished by having only the posterior border of the upper canine serrated, and also by the long diastema between the third and fourth lower premolars. In the event of this species being regarded as generically distinct, the name *Homotherium* is suggested.

HELDERMAN, W. D. De Tijger en het Bijgeloof. Tijdschr. Ind. Volkenkund, xxxiv, pp. 170–175.

MARTIN, P. Zur Entwicklung der Retina bei der Katze. Anat. Anz. v, pp. 551–556.

TOURNEUX, F. Note sur l'Intestin Caudal chez l'Embryon de Chat. C.R. Soc. Biol. (9) ii, pp. 97–100.

†*Felis* (?) *maxima*, n. sp., W. B. SCOTT, Bull. Mus. C. Z. xx, p. 79, fig. 4, Loup-Fork Beds, Kansas.

Lynx baileyi, n. sp., C. H. MERRIAM, *t. c.* (*suprà*, p. 9), No. 3, pp. 79 & 80, pl. xi, Arizona.

†*Machærodus crenatidens*, n. sp., E. FABRINI, *t. c.* p. 161, Pliocene, Italy.

†*Machærodus nestianus*, n. sp., E. FABRINI, *t. c.* p. 172, *ibid.*

b. HYÆNIDÆ.

For distribution, see C. GREVÉ, *suprà*, p. 26. EMIN PASHA, P. Z. S. 1890, pp. 647 & 648, mentions the occurrence of a Hyæna allied to or identical with *H. striata* in the neighbourhood of Tabora, E. Africa.

LYDEKKER, R. On the Occurrence of the Striped Hyæna in the Tertiary of the Val d'Arno. Q. J. Geol. Soc. xlii, pp. 62–65, woodcut.

Describes and figures part of a left maxilla, with the carnassial and portions of the adjacent teeth, from the deposits mentioned.

c. VIVERRIDÆ.

†*Viverra schlosseri*, n. sp., H. FILHOL, Bull. Soc. Philom. (8) ii, pp. 139–142, woodcuts, Quercy Phosphorites.

†*Viverra* (?) *simplicidens*, n. sp., M. SCHLOSSER, *t. c.* (*suprà*, p. 14), pp. 391–393, pl. ix, fig. 10, Quercy Phosphorites.

†*Viverra macrorhyncha*, n. sp., H. FILHOL, Bibl. haut. études, xxxvi, 1, p. 123, Mid. Miocene, Sansan.

Herpestes angolensis, n. sp., J. V. B. DU BOCAGE, J. Sci. Lisb. (2) ii, pp. 31 & 32, Angola.

d. CANIDÆ.

For distribution, see C. GREVÉ, *suprà*, p. 26.

BARTLETT, A. D. Observations on Wolves, Jackals, Dogs, and Foxes. P. Z. S. 1890, pp. 46–48.

MIVART, ST. GEORGE. Dogs, Jackals, Wolves, and Foxes: a Monograph of the *Canidæ*. London: 4to, pp. xxv & 216, illustrated.

A handsome work, illustrated with coloured plates of all the existing species, and woodcuts of skulls, teeth, &c. 35 species are recognized (*Canis anthus* being provisionally separated from *C. aureus*), of which 30 are referred to *Canis*, 2 to *Cyon*, and 1 each to *Icticyon*, *Lycaon*, and *Otocyon*.

——. Notes on Canine Dental Abnormalities. P. Z. S. 1890, pp. 376–378, woodcut.

——. Notes on the Genus *Cyon*. T. c. pp. 88–92.

The author concludes that there are but two species—*C. javanicus* and *C. alpinus*—their distinctive characters and numerous osteological measurements being given.

——. On the South American *Canidæ*. T. c. pp. 98–113, woodcuts.

The author calls attention to the difficulties in the way of the correct discrimination of these animals, and to what appear to him to be the unsatisfactory character of some of Burmeister's determinations and descriptions. Forms to which the names *Canis fulvipes*, *griseus*, *patagonicus*, *entrerianus*, *gracilis*, *vetulus*, and *fulvicaudus* had been assigned are declared to be quite insufficiently discriminated from *C. azaræ*. On the other hand, two very marked species, or possibly varieties, are noted and distinguished under the appellations *C. parvidens* and *C. urostictus*, the type of each of which was in the British Museum, both the skin, and the skull extracted from it, in each case.

NEHRING, A. Ueber *Cyon alpinus fossilis*, Nehring, nebst Bemerkungen über einige fossile Caniden. JB. Mineral. 1890, ii, pp. 34–52, pl. ii.

Describes and figures part of a mandible from the Pleistocene of Heppenloch, Würtemberg, which is referred to a variety of this existing species. A recent ramus is figured, in which the first premolar is absent. It is considered that *Lycoror nemestrianus*, Bourguignat, is founded upon a mandible of *Canis lupus* in which the first premolar is wanting; and that *Cyon edwardsianus*, of the same author, is based on a lower jaw of *Canis pallipes* in which the third molar is wanting. A preliminary notice of the substance of the paper is given in SB. nat. Fr. 1890, pp. 19–21.

O'REILLY, J. P. Notes on the History of the Irish Wolf-Dog. P. R. Irish Ac. (3) i, pp. 333–339.

WHITE, T. On the Wild Dogs of New Zealand. Tr. N. Z. Inst. xxii, pp. 327–330.

The author considers that the feral Maori Dogs indicate a peculiar breed quite distinct from any European one.

WINDLE, B. C. A., & HUMPHREYS, J. On some Cranial and Dental Characters of the Domestic Dog. P. Z. S. 1890, pp. 5–29.

An elaborate series of measurements of the skulls and teeth is given in various breeds of Dogs, and the authors attempt a classification based on

the relative width of the skull. Observations are recorded on the torsion of the upper premolars in the short-skulled species, and instances noticed of the presence of supernumerary upper molars.

Canis familiaris: PFITZNER, Tag. Deut. Nat. Vers. for 1889 (1890), notices a skeleton with abnormal foot structure.

Canis lupus: E. OLIVIER, Rev. Sci. Bourb. iii, pp. 20 & 21, has notes on its melanism.

Canis parvidens, n. sp. (or var.), ST. G. MIVART, P. Z. S. 1890, p. 108, figs. 3 & 4, Brazil.

Canis urostictus, n. sp. (or var.), MIVART, *t. c.* p. 112, figs. 5 & 6, *ibid.*

Canis dingo: L. LÉSEBLE, Bull. Soc. Acclim. xxxvii, pp. 681-684, has notes on living specimens at Paris.

†*Vulpes donnezani*, n. sp., C. DEPÉRET, *t. c.* (*suprà*, p. 4), p. 28, Pliocene, France.

†*Amphicyon intermedius*, see HOFMANN, *suprà*, p. 7.

†*Ælurodon compressus*, n. sp., E. D. COPE, Am. Nat. xxiv, pp. 1067 & 1068, Loup-Fork Miocene, Nebraska.

†*Prohyæna*, n. g., M. SCHLOSSER, *t. c.* (*suprà*, p. 14), p. 25; type, *Ælurodon wheelerianus*, Cope. Referred by its founder to *Hyænidæ*. Considered by SCOTT (*suprà*, p. 15) as inseparable from *Ælurodon*; the author being, however, misled into considering that it was *Æ. sævus* that Schlosser proposed to separate, and misquoting *Prohyæna* as *Palkhyæna*.

e. URSIDÆ.

Ursus tibetanus recorded by A. DATTAN (*suprà*, p. 4) from Manchuria.

f. MUSTELIDÆ.

LYDEKKER, R. On a New Species of Otter from the Lower Pliocene of Eppelsheim. P. Z. S. 1890, pp. 3-5, woodcut.

†*Lutra hessica*, n. sp., LYDEKKER, *l. c.*

†*Lutra reevei*, n. sp., E. T. NEWTON, Q. J. Geol. Soc. xlvii, p. 446, pl. xviii, fig. 2, Norwich Crag.

Conepatus humboldti, figured by MILNE-EDWARDS, *vide suprà*, p. 10.

Mephitis estor, n. sp., C. H. MERRIAM, *t. c.* (*suprà*, p. 9), No. 3, pp. 81 & 82, pl. x, Arizona.

Spilogale gracilis, n. sp., MERRIAM, *t. c.* pp. 83 & 84, Arizona.

Spilogale ringens, n. sp., MERRIAM, *op. cit.* No. 4 (p. 10), pp. 9 & 10, United States.

Spilogale indiana, n. sp., MERRIAM, *t. c.* p. 10, Texas.

Spilogale lucasana, n. sp., MERRIAM, *t. c.* p. 11, California.

Spilogale leucoparia, n. sp., MERRIAM, *t. c.* pp. 11 & 12, pl. i, figs. 4-6, Texas.

Spilogale saxatilis, n. sp., MERRIAM, *t. c.* p. 13, Utah.

Spilogale phenax, n. sp., MERRIAM, *t. c.* pp. 13 & 14, pl. i, figs. 1-3, California.

Spilogale phenax, n. var. *latifrons*, MERRIAM, *t. c.* p. 15, Oregon.

Mustela caurina, n. sp., MERRIAM, *t. c.* (*suprà*, p. 10), No. 4, pp. 26-29, California.

†*Mustela leptorhyncha*, n. sp., FILHOL, *Bibl. haut. études*, xxxvi, 1, p. 105, *ibid.*

†*Proputorius sansaniensis*, n. g. & sp., FILHOL, *t. c.* p. 112, *ibid.*

Gulo luscus: L. BELDING, *Zoe*, i, pp. 303 & 304, refers to its apparent occurrence in Canada.

†*Stenogale robusta*, n. sp., E. D. COPE, *Am. Nat.* xxiv, pp. 950 & 951, Loup-Fork Miocene, Nebraska.

††*Brachypsalis pachycephalus*, n. g. & sp., COPE, *t. c.* pp. 251 & 252, *ibid.*

†*Trochictis gaudryi*, n. sp., FILHOL, *t. c.* p. 91, Miocene, Sansan.

g. PROCYONIDÆ.

†*Ælurus anglicus*: an upper molar from the Red Crag, described and figured by E. T. NEWTON, *Q. J. Geol. Soc.* xlv, pp. 451 & 452, pl. xviii, fig. 9.

II. PINNIPEDIA.

GILPIN, J. B. On the Seals of Nova Scotia. *P. N.-Scot. Inst.* iii, pp. 377-384.

Popular notes on this subject.

SPITZKA, E. C. Zur Monographie Dr. Theodor's ueber das Seehundsgehirn. *Anat. Anz.* v, pp. 173-176; and Remarks on the Brain of the Seals: *Am. Nat.* xxiv, pp. 115-122.

Criticizes and condemns the views of Theodor [*Zool. Rec.* xxv, *Mamm.* p. 28], and concludes that the brain of the *Pinnipedia* is essentially of the typical carnivorous type; all its differences being due to the preponderance of some parts, and the atrophy of others.

h. OTARIIDÆ.

BEDDARD, F. E. On the Structure of Hooker's Sea Lion (*Arctocephalus hookeri*). *Tr. Z. S.* xii, pp. 369-380, pls. lxiv & lxv, woodcuts.

Describes, with figures, the external characters, splachnology, and osteology of this Seal. Concludes that if the genus *Otaria* be divided at all, there will be two genera—*Otaria*, containing only *O. jubata* (with its numerous synonyms), and *Arctocephalus*, with all the remaining members of the family. The diagnostic characters of the two genera are given on p. 379 of the memoir.

*DUNN, —. Investigation of the Fur Seal and other Fisheries of Alaska. Report from the Committee on Merchant Marine and Fisheries of the House of Representatives. Washington: 1889, 8vo, illustrations.

In addition to a description of the seal-fishery, there is a large amount of information on the history and habits of *Otaria* (*Callorhinus*) *ursina*.

WUNDERLICH, L. Die Seelöwen im zoologischen Garten zu Köln. Zool. Gart. xxxi, pp. 1-6, 33-39, & 129-134.

Notes on the Eared Seals in the Cologne Zoological Gardens.

i. PHOCIDÆ.

Phoca grænlantica: a mandibular ramus from a cave near Périgeux, described by A. GAUDRY, C.R. cxi, pp. 351-353.

Phoca vitulina: K. MÖBIUS, SB. nat. Fr. 1890, pp. 94 & 95, has notes on its breeding on the coast of Schleswig-Holstein.

†*Phoca moori*, n. sp., E. T. NEWTON, Q. J. Geol. Soc. xlvi, pp. 446 & 447, pl. xviii, fig. 3, Red Crag.

III. CREODONTA.

FILHOL, H. Étude du Skeleton du *Cynohyænodon*. Centenaire Mem. Soc. Philom. 1888, pp. 179-192, pls. xvii & xviii. [Omitted from Zool. Rec. xxv.]

A description of the skull and limb-bones of the genus mentioned, with figures.

j. HYÆNODONTIDÆ.

†*Hyænodon indicus*: it is shown by R. LYDEKKER, Geol. Mag. (3) vii, pp. 402 & 403, that certain teeth provisionally referred to this species are imperfect upper carnassials of *Amphicyon*.

5. RODENTIA.

BÜCHNER, E. Wissenschaftliche Resultate der von N. M. Przewalski nach Central-Asien unternommenen Reisen. Zoologischer Theil I. Säugethiere, pt. iv, pp. 137-184, pls. xvi-xx. [See Zool. Rec. xxvi, Mamm. p. 30.]

This part includes Rodents belonging to the families *Muridæ*, *Dipodidæ*, and *Lagomyidæ*. The species described are *Siphneus fontanieri* (pl. xv, figs. 12 & 13), *Dipus sagitta*, *Alactaga saliens*, *A. annulata*, *Lagomys roylei* (pl. xxiii, figs. 1 & 2), *L. rutilus* (pl. xx), *L. erythotis*, n. sp. (pls. xxi & xxiv, figs. 1-6), *L. dauricus* (pl. xxii, fig. 1, xxv, figs. 1-5), and *L. melanostomus*, n. sp. (pl. xxii, figs. 2 & 3). [See *Lagomyidæ*.]

BIHRINGER, J. Ueber die Umkehrung der Keimblätter bei den Nagetieren. Biol. Centralbl. x, pp. 403-414.

Observations on the germinal membranes of Rodents in general, and more especially in *Arvicola*, *Mus*, and *Cavia*.

CALDERON, S. Consideraciones sobre la Denticion de los Roedores. Ann. Soc. Esp. xix, pp. 279-297.

After discussing the peculiarities of the Rodent dentition, the author

compares it with that of other Mammals with a diprotodont dentition. Concludes by discussing the probable mode of origin of this type of dentition.

DUVAL, M. Le Placenta des Rongeurs. J. de l'Anat. Phys. xxvi, pp. 1-48, pls. i & ii, and pp. 273-344 & 521-592, woodcuts.

A continuation of the memoir quoted in Zool. Rec. xxvi, *Mamm.* p. 28 ; the present part describing the placentation of the Rabbit, and concluding with an account of the inversion of the blastodermic membranes.

FLEISCHMANN, A. Die Stammesverwandschaft der Nager (*Rodentia*) mit der Beutelhieren (*Marsupialia*). SB. Ak. Berlin, 1890, pp. 299-305. [Translated in Ann. N. H. (6) vi, pp. 289-291 (On the Relationship of the *Rodentia* to the *Marsupialia*).]

The author considers that Rodents may be directly derivable from Marsupials, urging that we may recognize, step by step, in the existing forms, the stages which render the transmission of long-inherited structures intelligible. It is added that in the author's opinion there is also an intimate relationship between the *Insectivora* and Bats on the one hand, and the Polyprotodont Marsupials on the other.

HOCHSTETTER, F. Ueber die Entwicklung der A. [rteria] vertebralis, beim Kaninchen, nebst Bemerkungen ueber die Entstehung der *Ansa vieussenii*. Morph. JB. xvi, pp. 572-586, pl. xxi.

LATASTE, F. Recherches de Zooéthique sur les Mammifères de l'Ordre des Rongeurs. Bordeaux : 1889, 8vo, 676 pp., 6 pls.

A reprint of the author's papers, published in the Act. Soc. L. Bord., on the habits and physiology of various Rodents.

MAGGI, L. Intorno al Canale Cranio Faringeo in alcuni Rosicanti. Rend. Ist. Lombardo (2) xxiii, p. 719, *et seq.*, and pl. [Summarised in Boll. scient. xii, pp. 149 & 150.]

Observations on certain cranial canals in the Hare, Rabbit, and Guinea Pig.

MEARNS, E. A. Description of supposed New Species and Subspecies of Mammals from Arizona. Bull. Am. Mus. Nat. Hist. ii, pp. 277-307.

The new species are all Rodents, and comprise 1 *Arvicola*, 2 *Dipodomys*, 1 *Cynomys*, and 2 *Lepus* ; and the new varieties—1 *Sciurus*, 1 *Fiber*, 2 *Hesperomys*, and 1 *Sigmodon*. [See *Sciurida*, *Murida*, and *Geomyida*.]

MINOT, C. S. Die Placenta des Kaninchens. Biol. Centralbl. x, pp. 114-122.

A summary of previous work on the placentation of the Rabbit, with a full account of the author's own researches on the subject.

NUSSBAUM, J. Zur Entwicklungsgeschichte der Placenta bei der Maus (weisse Varietät). Anat. Anz. v, pp. 233-236.

a. SCIURIDÆ.

ALLEN, J. A. A Review of some of the North American Ground-Squirrels of the genus *Tamias*. Bull. Am. Mus. Nat. Hist. iii, pp. 45-116.

This paper is restricted to the forms included in the author's previous works under *Tamias asiaticus*, and the one described by Merriam as *T. macrorhabdotes*. Nine of these forms have previously received separate varietal names; the species *minimus*, *quadrinaculatus*, and *macrorhabdotes* bringing up the named forms to eleven in number. The author now proposes to rank these under twenty-four distinct names, to sixteen of which are assigned specific rank. The following new specific names are given, viz., *umbrinus* (p. 96), *obscurus* (p. 70), *cinereicollis* (p. 94), *speciosus* (p. 86), *frater* (p. 88), *amœnus* (p. 90), and *senex* (p. 83); the five following varietal names are raised to specific rank, viz., *quadrivittatus* (p. 97), *bulleri* (p. 92), *dorsalis* (p. 68), *merriami* (p. 84), and *townsendi* (p. 72); while the new varietal names proposed are *quadrivittatus neglectus* (p. 106), *qu. affinis* (p. 103), *qu. luteiventris* (p. 101), *qu. gracilis* (p. 99), *minimus consobrinus* (p. 112), and *m. pictus* (p. 115). The typical *T. asiaticus* is regarded as exclusively Euro-Asiatic.

——. On Seasonal Variations in Colour in *Sciurus hudsonianus*. Bull. Am. Mus. Nat. Hist. iii, pp. 41-44.

Shows that the black lateral line is a feature of the summer pelage, and that the seasonal change of coloration is due to a shedding of the hairs.

MEYER, A. B. Description of a new Squirrel from the Philippine Islands. P. Z. S. 1890, pp. 599-601.

Eupetaurus cinereus: F. A. JENTINK, Notes Leyd. Mus. xii, pp. 143 & 144, pl. vii, figs. 1 & 2, records a specimen in the Leyden Museum, said to be from Tibet, with figures of the dentition.

Sciuropterus platyurus, n. sp., JENTINK, *t. c.* pp. 145-148, pl. vii, figs. 3-10, Sumatra.

Sciuropterus vordermanni, n. sp., JENTINK, *t. c.* pp. 150 & 151, pl. vii, fig. 15, Billiton (off Borneo).

Sciurus cagsi, n. sp., A. B. MEYER, *l. c.*, Philippines.

Sciurus everetti, n. sp., O. THOMAS, Ann. N. H. (6) vi, pp. 171 & 172, Borneo.

Sciurus weberi, n. sp., F. A. JENTINK, in Weber's Zool. Ergeb. (*suprà*, p. 18), p. 115, pls. viii & x, figs. 1-3, Celebes.

Sciurus hudsonius, n. var. *mogolloneusis*, E. A. MEARNS, Bull. Am. Mus. Nat. Hist. ii, pp. 277-280, Arizona.

Sciurus niger, n. var. *melanonotus*, O. THOMAS, P. Z. S. 1890, pp. 73 & 74, pl. vi, Vera Cruz, Mexico.

Sciurus bayonii, n. sp., J. V. B. DU BOGAGE, J. Sci. Lisb. (2) ii, p. 3, Angola.

Sciurus mindanensis, n. sp., J. B. STEERE, *t. c.* (*suprà*, p. 16), p. 29, Philippines.

Sciurus samarensis, n. sp., STEERE, *t. c.* p. 30, *ibid.*

Sciurus pyrrhopus, n. var. *anerythrus*, O. THOMAS, P. Z. S. 1890, pp. 447 & 448, pl. xl, S. of Lake Albert Nyanza.

Sciurus hudsonius, n. varr. *vancouverensis* and *californicus*, J. A. ALLEN, Bull. Am. Mus. Nat. Hist. iii, p. 165, Vancouver I. and California.

Sciurus cervicalis, n. sp., ALLEN, *t. c.* pp. 183 & 185, Mexico.

Tamias umbrinus, *T. obscurus*, *T. cinereicollis*, *T. speciosus*, *T. frater*, *T. amoenus*, *T. senex*, n. spp., J. A. ALLEN, *t. c.* (*suprà*, p. 33), North America; *T. quadrivittatus*, *T. bulleri*, *T. dorsalis*, *T. merriami*, *T. townsendi*, previously described as varieties, are raised by ALLEN, *l. c.*, to the rank of species. *T. quadrivittatus neglectus*, *T. qu. affinis*, *T. qu. luteiventris*, *T. qu. gracilis*, *T. minimus consobrinus*, *T. m. pictus*, n. varr., J. A. ALLEN, *l. c.*

Tamias leucurus, n. var. *cinnamoneus*, C. H. MERRIAM, *t. c.* (*suprà*, p. 9), No. 3, pp. 51-53, San Francisco.

Tamias castanurus, n. sp., *T. chrysodirus*, n. sp., *T. cinerascens*, n. sp., *T. interpres*, n. sp., *T. minimus*, n. var. *melanurus*, MERRIAM, *op. cit.* No. 4, (p. 10), pp. 17-22, United States.

Tamias mccllellandi = *Sciurus mccllellandi*, Horsf.; see E. BÜCHNER, Mém. biol. xiii, p. 155.

Spermophilus rufescens, recorded from the Pleistocene of Bohemia, by A. NEHRING, SB. nat. Fr. 1890, pp. 21-23.

Spermophilus cryptospilotus, n. sp., C. H. MERRIAM, *t. c.* (*suprà*, p. 9), No. 3, pp. 57 & 58, pl. ix, figs. 1-3, Arizona.

Spermophilus pratensis, n. varr. *prutensis* and *obsidianus*, MERRIAM, *t. c.* pp. 55-57, Arizona.

Spermophilus canescens, n. sp., MERRIAM, *op. cit.* No. 4, p. 38, Arizona.

Spermophilus spilosoma, n. varr. *macrospilotus* and *major*, MERRIAM, *t. c.* pp. 38 & 39, Arizona and New Mexico.

Spermophilus beldengi: notes on, by B. LANGKÄVEL, Zool. Gart. xxxi, pp. 176-178.

†*Arctomys primigenia*, recorded by J. N. WOLDRICK, Verh. Geol. Reichsanst. 1890, p. 299, from Bohemia.

Arctomys bobac, recorded from the Pleistocene of Bohemia, by A. NEHRING, SB. nat. Fr. 1890, pp. 21-23.

Cynomys leucurus, n. sp., C. H. MERRIAM, *t. c.* (*suprà*, p. 10), No. 4, pp. 33-35, Wyoming.

Cynomys arizonensis, n. sp., E. A. MEARN, Bull. Am. Mus. Nat. Hist. ii, pp. 305 & 306, Arizona.

b. CASTORIDÆ.

BOGDANOV, A. Note sur les Castors de la Russe Occidentale. C.R. Congrès Internat. Zool. 1889, pp. 63 & 64.

Records Beavers from the river Svislotch, Government of Minsk, and also from the Dnieper.

MAYET, V. Le Castor du Rhone. C.R. Congrès Internat. Zool. 1889, pp. 58-63.

Considers that from 25 to 30 Beavers are killed annually in the Rhone basin.

Castor fiber, E. L. MITFORD, Zool. (3) xvi, pp. 177 & 178, refers to a specimen from the Rhone.

+*Trogontherium minus*, n. sp., E. T. NEWTON, Q. J. Geol. Soc. xlvi, pp. 447 & 448, pl. xviii, figs. 5 & 6, Red Crag.

+*Steneofiber jageri*, see HOFMANN, *supra*, p. 7.

+*Steneofiber minimus*, n. sp., FILHOL, Bibl. haut. études, xxxvi, 1, p. 45, Miocene, Sansan.

c. MYOXIDÆ.

REUVENS, C. L. Die *Myoxidæ* oder Schläfer.—Ein Beitrag zur Osteologie und Systematik der Nagethiere. Leyden : 1890, 4to, pp. 1-80, pls. i-iv.

This memoir, illustrated with figures of skulls and dentition, is a detailed treatise on the external characters, dentition, and cranial osteology of the Dormice. The author concludes that *Eliomys*, *Graphiurus*, *Muscardinus*, and *Bifa* should be regarded merely as subgenera of *Myoxus*, although the species are quoted under these several names. A detailed synopsis is given of all the species, 1 new species of *Eliomys* being described.

Eliomys kelleni, n. sp., REUVENS, t. c. p. 35, W. Africa.

d. MURIDÆ.

For figures and descriptions of the *Muridæ* of S. America, see MILNE-EDWARDS, *supra*, p. 10.

MAHN, R. Bau und Entwicklung der Molaren bei *Mus* und *Arvicola*. Morph. JB. xvi, pp. 652-685, pl. xxv.

Shows the gradual acquisition of the complex characters of the adult molars of *Arvicola* in the teeth-germs, and compares this with the simpler teeth of *Mus*.

NEWTON, E. T. On the occurrence of Lemmings and other Rodents in the Brick-Earth of the Thames Valley. Geol. Mag. (3) vii, pp. 452-455, woodcut.

Records remains of *Arvicola amphibius*, *A. ratticeps*, *Cuniculus torquatus*, and *Myodes lemmus*.

SCLATER, W. L. Notes on some Indian Rats and Mice. P. Z. S. 1890, pp. 522-539, pls. xlv & xlv.

This paper has notes on all the Indian species of *Muridæ* represented in the collection of the Indian Museum, Calcutta, and is illustrated with figures of skulls and teeth of several species. It is considered that *Nesocia brachyura*, Büchner, is probably identical with *N. scullyi*, Wood-Mason.

The paper concludes with a table of cranial measurements, and also of type specimens preserved in the Indian Museum.

RUTLAND, J. On the Habits of the New Zealand Bush-Rat (*Mus maorium*). Tr. N. Z. Inst. xxii, pp. 300-307.

Gerbillus validus, n. sp., J. V. B. DU BOCAGE, J. Sci. Lisb. (2) ii, pp. 6 & 7, pl. i, fig. 1, Congo.

Phlaeomys pallidus, n. sp. (or var. of *P. cumingi*), A. NEHRING, SB. nat. Fr. 1890, p. 105, Philippines. On pp. 153 & 154 of the same this form is definitely regarded only as a variety.

Phlaeomys cumingi: A. B. MEYER, Zool. Gart. xxxi, pp. 195-200, has a notice of certain examples recently brought alive to Europe. It is concluded that there is no evidence for regarding the lighter-coloured form described by Nehring as *P. pallidus* as a distinct species.

†*Cricetus angustidens*, n. sp., C. DEPÉRET, t. c. (*suprà*, p. 4), p. 54, Pliocene, France.

Hesperomys megalotis, n. sp., C. H. MERRIAM, *op. cit.* (*suprà*, p. 9), No. 3, pp. 63-65, pls. iii & iv, Arizona.

Hesperomys leucopus, n. var. *rufinus*, MERRIAM, t. c. pp. 64-66, pl. iii, Arizona.

Hesperomys macropus, n. sp., MERRIAM, *op. cit.* No. 4 (p. 10), pp. 53 & 54, pl. iii, Florida.

Hesperomys leucopus, n. var. *arcticus*, and n. var. *deserticolus*; E. A. MEARNs, Bull. Am. Mus. Nat. Hist. ii, pp. 285 & 286, Arizona.

Hesperomys (Notiomys) edwardsi, n. sp. & subg., O. THOMAS, in Milne-Edwards' Mammifères du Cap Horn (*suprà*, p. 10), pp. 23-26, pls. iii, fig. 1, & viii, fig. 1, Santa Cruz.

Onychomys fuliginosus, n. sp., C. H. MERRIAM, *op. cit.* No. 3, pp. 59-61, Arizona.

Onychomys melanophrys, n. var. *pallescent*, MERRIAM, t. c. pp. 61-62, Arizona.

Sigmodon hispidus, n. var. *arizonæ*, E. A. MEARNs, Bull. Am. Mus. Nat. Hist. ii, pp. 287-290, Arizona.

Arvicola mogollonensis, n. sp., MEARNs, t. c. pp. 283 & 284, Arizona.

Arvicola (Mynomes) alticolus, n. sp., C. H. MERRIAM, *op. cit.* No. 3, pp. 67-69, pls. v & vi, Arizona.

Evotomys galei, n. sp., MERRIAM, t. c. No. 4, pp. 23 & 24, pl. ii, fig. 3, Colorado.

Evotomys occidentalis, n. sp., MERRIAM, t. c. pp. 25 & 26, pl. ii, fig. 1, Washington.

Evotomys californicus, n. sp., MERRIAM, t. c. p. 26, California.

Fiber zibethicus, n. var. *pallidus*, E. A. MEARNs, Bull. Am. Mus. Nat. Hist. ii, pp. 280-283, Montana.

Siphneus fontanieri, figured by E. BÜCHNER, t. c. (*suprà*, p. 31), pl. xv, figs. 12 & 13.

Mus wichmanni, n. sp., F. A. JENTINK, in Weber's Zool. Ergeb. (*suprà*, p. 18), pp. 120 & 121, pls. ix & x, figs. 7-11, Flores.

Mus anchietae, n. sp., J. V. B. DU BOCAGE, J. Sci. Lisb. (2) ii, pp. 11 & 12, pl. i, fig. 3, Angola.

Mus angolensis, n. sp., BOCAGE, *t. c.* pp. 12 & 13, Angola.

Mus poschiavanus. — DAVATZ, Arch. Sci. Nat. xxiv, p. 525, has observations on this Swiss form, and its points of difference from *M. musculus*. A. ORTMANN, Zool. Anz. xiii, pp. 155-157, has a note on the same subject.

†*Mus donnezani*, n. sp., C. DEPÉRET, *t. c.* (*suprà*, p. 4), p. 50, Pliocene, France.

Pithechirus melanurus, see JENTINK, *suprà*, p. 7.

†*Lophiomyys pyrenaicus*, n. g. & sp., C. DEPÉRET, *t. c.* (*suprà*, p. 4), p. 53, Pliocene, France. [Generic name preoccupied.—R. L.]

e. SPALACIDÆ.

BOCAGE, J. V. BARBOZA DU. Les Rats-Taupes d'Angola. J. Sci. Lisb. (2) iv, pp. 269-276, woodcut.

Gives the characters of the genus *Georychus*, and concludes that of the 10 named species only *G. capensis* and *G. mechowii* can be regarded as definitely established.

✓*Myoscalops*, n. n., O. THOMAS, P. Z. S. 1890, p. 448, to replace *Helio-phobius*, preoccupied.

f. GEOMYIDÆ.

Geomys bursarius, n. var. *lutescens*, C. H. MERRIAM, *t. c.* (*suprà*, p. 10), No. 4, p. 51, Nebraska.

✓*Dipodops*, n. g., MERRIAM, *op. cit.* No. 3 (p. 9), pp. 71 & 72; type *Dipodomys agilis*, Gambel.

Dipodops longipes, n. sp., MERRIAM, *t. c.*, Arizona.

Dipodops ordi (Woodhouse), referred to this genus by MERRIAM, *op. cit.* No. 4, p. 45.

Dipodomys ambiguus, n. sp., MERRIAM, *t. c.* pp. 42-45, Texas.

Dipodomys spectabilis, n. sp., MERRIAM, *t. c.* pp. 46-48, Arizona.

Dipodomys californicus, n. sp., MERRIAM, *t. c.* p. 49, California.

Dipodomys merriami, n. sp., E. A. MEARNs, Bull. Am. Mus. Nat. Hist. ii, pp. 290 & 291, Arizona.

Dipodomys chapmani, n. sp., MEARNs, *t. c.* pp. 291-294, *ibid.*

Perognathus fuliginosus, n. sp., MERRIAM, *t. c.* p. 74, *ibid.*

g. DIPODIDÆ.

BARDELEBEN, K. Hat der Präpollex von *Pedetes* einen Nagel oder nicht? Anat. Anz. v, pp. 321 & 322.

Discusses the question whether the prepollex of *Pedetes* is provided with a nail.

SCLATER, W. L. On a New Genus and Species of Rodents of the Family *Dipodidæ* from Central Asia. P. Z. S. 1890, pp. 610-613, pl. 1, woodcut.

The species described was probably obtained from Yarkand, and indicates a fourth genus of *Dipodinæ*, readily distinguished by cranial characters.

†*Euchoreutes naso*, n. g. & sp., W. L. SCLATER, l. c.

h. HYSTRICIDÆ.

MEEK, A. Note on the Female Organs of *Erethizon dorsatus*. Stud. Mus. Dundee, i, Art. xii, 1 p., and plate.

Figures these organs in order to show the extremely primitive structure they present.

i. CHINCHILLIDÆ.

MANIGAULT, G. E. Notes on the Osteology of *Chinchilla lanigera*. P. Elliott Soc. 1890, pp. 237-239, woodcuts.

The peculiarities indicated are the presence of three sacral vertebrae, and of a semi-lunar ossification in the external auditory meatus. The latter is regarded as representing part of the petrosal; it occurs in *Cavia* and some other *Hystricomorpha*.

j. CASTOROIDIDÆ.

Castoroides ohioënsis: the discovery of an almost complete skeleton at Richmond, Indianapolis, recorded by E. W. CLAYPOLE, Am. Geol. vi, p. 260, and by J. MOORE, Am. Nat. xxiv, p. 767.

k. CAVIIDÆ.

†*Hydrochærus robustus*: an incisor from the Ashley River, S. Carolina, provisionally referred to this species by J. LEIDY, P. Ac. Philad. 1890, pp. 184 & 185.

l. LAGOMYIDÆ.

Lagomys erythotis, n. sp., E. BÜCHNER, t. c. (*suprà*, p. 31), pp. 165-172, pls. xxi & xxiv, figs. 1-6, Central Asia.

Lagomys melanostomus, n. sp., BÜCHNER, t. c. pp. 176-184, pl. xxii, figs. 2 & 3.

Lagomys roylei, *L. rutilus*, and *L. dauricus*, figured by BÜCHNER, t. c.

m. LEPORIDÆ.

HALL, E. S. On a Case of the Occurrence of a Persistent Right Posterior Cardinal Vein in the Rabbit. P. Z. S. 1890, pp. 577-579, woodcut.

Lepus alleni, n. sp., E. A. MEARNs, Bull. Am. Mus. Nat. Hist. ii, pp. 294-297, Arizona.

Lepus melanotis, n. sp., MEARNs, t. c. pp. 297-300, *ibid.*

Lepus verae-crucis, n. sp., O. THOMAS, P. Z. S. 1890, pp. 74 & 75, Vera Cruz, Mexico.

Lepus cinerascens, n. sp., J. A. ALLEN, Bull. Am. Mus. Nat. Hist. iii, p. 159, S. California.

Lepus sylvaticus, n. var. *floridanus*, ALLEN, t. c. p. 160, South Florida ; and n. var. *aztecus*, ALLEN, t. c. p. 188, Mexico.

Lepus insolitus, n. sp., ALLEN, t. c. p. 189, Mexico.

Lepus truci, n. sp., ALLEN, t. c. pp. 192-194, Mexico.

INCERTÆ SEDIS.

†*Ruscinomys europæus*, n. g. & sp., C. DEPÉRET, t. c. (*suprà*, p. 4), p. 60, Pliocene, France.

6. UNGULATA.

LEUTHARDT, F. Ueber die Reduction der Fingerzahl bei Ungulaten. Zool. Jahrb.-Abth. f. Syst. v, pp. 93-146, pls. i-xxiii.

An elaborate memoir, illustrating the gradual reduction of the digits in the more specialized Ungulates, with a large number of figures of foot-structure.

SUCHETET, A. La Fable des Jumarts. Mém. Soc. Zool. iii, pp. 1-30.

Discusses the alleged production of hybrids between *Bos* and *Equus*, and concludes that there is no foundation for the idea.

TRUE, F. W. Description of Two New Species of Mammals from Mt. Kilima-njaro, East Africa. P. U. S. Nat. Mus. xiii, pp. 227-229.

Describes a new species of *Cephalophus*, and one of *Dendrohyrax*, the former obtained at a high altitude. [See *Bovidæ* and *Hyracidæ*.]

I. TILLODONTIA.

a. CALAMODONTIDÆ.

†*Calamodon europæus*, n. sp., L. RÜTIMEYER, Verh. Ges. Basel, ix, p. 18, woodcut, Eocene, Switzerland.

II. PROBOSCIDEA.

b. ELEPHANTIDÆ.

BROWN, C. G. Elephant Catching in Mysore in November, 1889. London: 1890, 4to.

A series of photographs, with brief descriptions.

CACCIAMOLI, G. B. Gli Elefanti Fossili d'Aquino. Bol. Soc. geol. Ital. ix, pp. 423-425.

Describes and figures a milk-molar referred to *Elephas meridionalis* or *E. antiquus*.

MARTIN, K. Ueber neue *Stegodon*- Reste aus Java. Verh. Ak. Amst. xxviii, 14 pp., 3 pls.

Describes and figures remains of Stegodont Elephants from the Pliocene of Java, referred to the new species *Stegodon airawana*, and to *S. trigonocephalus* and *S. bombifrons*.

WEITHOFER, K. A. Die Fossilen Proboscider der Arno-Thales in Toskana. Beitr. Pal. Oesterr.-Ung. viii, pp. 107-240, pls. i-xv.

An elaborate and finely illustrated memoir on the fossil Proboscideans of the Val d'Arno. The species described are *Mastodon arvernensis*, *Elephas meridionalis*, *E. lyrodon*, *E. antiquus*, and *E. primigenius*. The second part of the memoir treats of certain features in the development of Elephants, and also of their phylogeny; while the concluding section is devoted to the geological and geographical distribution of the group.

†*Elephas primigenius*: SCHAFFAUSEN, Verh. Ver. Rheinl. (5) vi, pp. 61-69, gives an account of ancient and modern discoveries of its remains in Siberia. Remains from Iowa recorded by E. H. BARBOUR, Science, xvi, p. 263.

†*Stegodon airawana*, n. sp., K. MARTIN, t. c. p. 4, pls. i & ii, Pliocene, Java.

†*Mastodon rugosidens*, n. sp., J. LEIDY, P. Ac. Philad. 1890, p. 184, Ashley river, S. Carolina.

III. HYRACOIDEA.

c. HYRACIDÆ.

Dendrohyrax validus, n. sp., F. W. TRUE, t. c. (*suprà*, p. 39), pp. 228 & 229, Kilima-njaro, E. Africa.

IV. TOXODONTIA.

For observations on the tridactylism of the fore-feet, see TROUESSART, *suprà*, p. 17.

V. PERISSODACTYLA.

d. LOPHIODONTIDÆ.

↓†*Colodon luxatus*, n. g. & sp., O. C. MARSH, Am. J. Sci. (3) xxxix, p. 524, Miocene, Dakota.

e. EQUIDÆ.

D'ORCET, —. Le Cheval à Travers les Ages. Bull. Soc. Acclim. xxxvii, pp. 1-12, 393-403, 505-517, 633-644, 825-835, 921-929, & 1118-1128, woodcuts.

An account of the records of the early domestication of the Horse. The paper is not yet completed.

KULCZYCKI, W. Abnorme Maschenbildung im Verlaufe der Arteria Collateralis Ulnaris beim Pferde. Anat. Anz. v, pp. 679-682, woodcuts.

MACDONALD, T. F. Notes on the Hydrostatic Arrangements in the Horse's Foot. P. Phil. Soc. Glasg. xxi, pp. 138-141, pl. v.

POMMEROL, F. Un Petit Cheval Quaternaire de la Limagne. Rev. Sci. Bourb. iii, pp. 293-300, pls. ii & iv.

Describes molars of a small species of *Equus* from superficial deposits in the Limagne, which are regarded as indicating a species allied to *E. przewalskii*, for which the name *E. lemanensis* is suggested.

PAVLOW, M. [MADAME]. Études sur l'Histoire Paléontologique des Ongules : Pts. IV & v. *Hipparion* de la Russie, and Chevaux pléistocènes de la Russie. Bull. Mosc. 1889, pp. 83-146, pls. vii-ix.

The fourth part of this memoir describes remains of *Hipparion gracile*, and of a new species named *H. (?) minus*, from the Russian Pliocene and Pleistocene. In the fifth part we have a description of fossil Russian Horses referable to *Equus*, with a summary of previous work. These are referred to *E. caballus*, *E. fossilis*, *E. asinus*, and *E. stenonis*. The paper concludes with observations on the phylogeny and distribution of the *Equidæ*.

STEEL, J. H. Mules. J. Bomb. N. H. Soc. v, pp. 252-260.

Equus grevyi and *burchelli* : P. L. SCLATER, P. Z. S. 1890, pp. 412 & 414, woodcuts, describes and figures a flat skin from Somali-land referred to the former, and another from Masai-land assigned to the latter species. [See also A. MILNE-EDWARDS, *t. c.* p. 647.]

†*Equus lemanensis*, n. sp., F. POMMEROL, *t. c.* p. 300, Pleistocene, Limagne, France.

†*Hipparion* : A. GAUDRY, Bull. Soc. Géol. (3) xviii, pp. 189-191, has a note on the date and place of publication of the name, and on its right to stand in place of *Hippotherium*.

†*Hipparion (?) minus*, n. sp., M. PAVLOW, *t. c.* p. 93, Pliocene, Russia.

†*Hippotherium princeps*, n. sp., J. LEIDY, P. Ac. Philad. 1890, pp. 182 & 183, Tertiary, Florida.

e. RHINOCEROTIDÆ.

For the American fossil forms, and also the homology of the structure of the molars, see SCOTT & OSBORN, p. 15.

GIOLI, G. Sopra alcuni resti di *Rhinoceros etruscus*, Falc., rinvenuti a Prata, presso Massa Marittima. Atti Soc. Tosc. vii, p. 56.

Rhinoceros sinus : P. L. SCLATER, Nature, xlii, pp. 520 & 521, has a note, with figures, on the difference between the head of this species and that of *R. bicornis*. F. A. JENTINK, Notes Leyd. Mus. xii, pp. 241-245, records a stuffed specimen and a flat skin in the Leyden Museum.

†*Rhinoceros antiquitatis* (*tichorhinus*) remains from Herotic, near Tischnowic, recorded by J. PROCHÁZKA, Verh. Geol. Reichsanst. 1890, pp. 107-109.

†*Rhinoceros longipes*, n. sp., J. LEIDY, P. Ac. Philad. 1890, p. 183, Pliocene, S. Carolina.

f. PROTOTHERIIDÆ.

See TROUESSART, *suprà*, p. 17.

g. LAMBDOOTHERIIDÆ.

√†*Limnohyops*, n. g., O. C. MARSH, Am. J. Sci. (3) xxxix, p. 525; type, *Palaeosyops laticeps*, Marsh, Miocene, Dakota.

h. CHALICOTHERIIDÆ.

Identification of *Moropus* with *Chalicotherium* by SCOTT & OSBORN, *suprà*, p. 15. See also FILHOL, *suprà*, p. 5.

i. TITANOTHERIIDÆ.

††*Diplocionus amplus*, n. g. & sp., O. C. MARSH, Am. J. Sci. (3) xxxix, p. 524, Miocene, Dakota.

√†*Teleodius avus*, n. g. & sp., MARSH, *l. c. ibid.*

VI. ARTIODACTYLA.

BOAS, J. E. V. Ein Fall von vollständiger Ausbildung des 2 und 5 Metacarpale beim Rind. Morph. JB. xvi, pp. 530-533, woodcuts.

Describes and figures the fore-foot of a Calf, with complete lateral metacarpals. The left foot shows an abnormal co-ossification of the second and third phalanges of the two middle digits.

——. Ueber den Metatarsus der Wiederkäuer. *T. c.* pp. 525-529, woodcuts.

——. Zur Morphologie des Magens der Cameliden und der Traguliden, und ueber die systematische Stellung letzterer Abtheilung. *T. c.* pp. 494-523, pl. xix, woodcuts.

A comparison of the structure of the stomach of the *Camelidæ* and *Tragulidæ*. The author concludes that the latter are rightly regarded as a distinct group of the *Artiodactyla*.

SCLATER, W. L. Notes on Indian Horned Game. Calcutta : 1890, 16mo, 24 pp.

A series of notes on Indian Pecora, reprinted from the Asian. Especial attention is paid to the largest duly authenticated dimensions attained by the horns and antlers of the various species.

RODGER, A., & WEITHOFER, K. A. Die Wiederkäuer der Fauna von Maragha. Denk. Ak. Wien, lvii, pp. 753-772, pls. i-vi. Preliminary notice in Anz. Ak. Wien. xxvii, pp. 154 & 155.

An illustrated monograph of several new Ruminants from the Pliocene of Maragha, in Persia, with a list of the species previously described. *Urmitherium* is referred to the *Sivatheriidae*. In the *Giraffidae* (*Camelopardalidae*) the new genus *Alcicephalus* is described, which appears to connect *Helladotherium* with the *Cervidae*. A new species of *Gazella*, as well as one of *Antidorcas* (?) and 1 of *Tragelaphus* (?), are described. The Pikermi species of *Palaeoryx*, *Helicophora*, *Protragelaphus*, and *Tragoceros* are also recorded from Maragha. [See *Giraffidae* and *Bovidae*.]

WINCZA, H. Ueber ein transitorisches Rudiment einer knöchernen Clavicula bei Embryonen eines Ungulaten. Morph. JB. xvi, pp. 647-651, pl. xxiv.

Describes and figures a section of an embryo of the Sheep, showing rudiments of an ossified clavicle.

j. BOVIDÆ.

BLANFORD, W. T. On the Gaur (*Bos gaurus*) and its Allies. P. Z. S. 1890, pp. 592-599, pl. xlix, woodcuts.

Gives the distinctive characters of *B. gaurus*, *B. frontalis*, and *B. sondaicus*, with figures of the two former.

BOUVIER, E. L. L'Extinction du Bison Americain. Le Nat. 1890, pp. 269-271, 285, & 286, woodcuts.

An illustrated article based on Hornaday's work noticed in Zool. Rec. xxvi, *Mamm.* p. 41.

BUXTON, E. N. Notes on the Wild Sheep and Mountain-Antelope of Algeria. P. Z. S. 1890, pp. 361-363.

Sporting notes on *Ovis tragelaphus* and *Gazella kevela*.

CRAWSHAY, R. On the Antelopes of Nyassa-land. T. c. pp. 648-663, woodcut.

The author treats more especially of the Antelopes met with west of the Lake. Lichtenstein's Hartebeest is stated to be very generally distributed, and seven other Antelopes were plentiful. The Kudu, Sable, Antelope, and Black-tailed Gnu were seldom met with ; but exact localities were given where these Antelopes were to be found. In conclusion, the author added that there were at least two other species of small Antelopes found in the hills, which hitherto he had not been able to identify. The skull of *Alcelaphus lichtensteini* is figured.

GÜNTHER, A. Note on the Skull of the East African Reed-buck (*Cervicapra bohor*). *T. c.* pp. 604-607, woodcuts.

Describes and figures the orbital region of the skulls of *C. redunca* and *C. bohor*. The question whether the S. African *C. redunca* is identical with the W. African form so named is left open.

HENRY, A. Notes on two Mountain-Antelopes of Central China. *T. c.* pp. 93 & 94.

Notifies two species of *Nemorhædus*, one identical with *Capricornis argyrochaetus* of Heude, and the other referable to a species known as *Kemas henryi*, of the same writer. It is not known whether the latter name has been published.

JENTINK, F. A. On *Strepsiceros kudu* and *S. imberbis*. Notes Leyd. Mus. xii, pp. 211-221, pl. ix, figs. *c, g, k, l, n*.

Has notes on the horns and specific characters of these two forms.

LANGKÄVEL, B. Wildschäfe, Wildziegen, und Antilopen des Himalaya. Zool. Gart. xxxi, pp. 104-114.

Notes on the Cavicorn Ruminants of the Himalaya, mainly based on Macintyre's "Hindu-Koh." *Antilope cervicapra (bezoartica)* is erroneously included as an Himalayan form.

LYDEKKER, R. Recent Contributions to our Knowledge of Wild Sheep. Field, lxxvi, pp. 910 & 947.

A semi-popular account of all the known species.

ST. LOUP, R. Les Moutons Sauvages (Le Mouflon Kaschkar, ou *Ovis poli*). Le Nat. 1890, pp. 272-274, woodcut.

An illustrated popular account of this Sheep.

STEEL, J. H. Indian Cattle. J. Bomb. N. H. Soc. v, pp. 71-82.

WOODWARD, A. S. Note on the Occurrence of the Saiga Antelope in the Pleistocene Deposits of the Thames Valley. P. Z. S. 1890, pp. 613-616, woodcut.

Describes and figures a frontlet.

Bos americanus: R. C. AULD, Am. Nat. xxiv, pp. 787-796, has suggestions for preserving the breed without deterioration. On pp. 953-954 of the same notes are given on a skull exhumed at Syracuse, New York.

Probubalus mindorensis, n. sp., J. B. STEERE, *t. c.* (*suprà*, p. 16), Philippines. See also A. NEHRING, *suprà*, p. 11, where this species is referred to *Bubalus*; the latter writer has a further note in Zool. Anz. xiii, pp. 448-451, where the species is regarded as a valid one.

†*Bos elatus*: *Leptobos stozzii* identified with this species, which is referred to *Leptobos*, by C. J. FORSYTH-MAJOR (*suprà*, p. 5).

Capra falconeri: the horns of the three varieties figured by MACINTYRE, *vide suprà*, p. 9.

Damalis senegalensis: notes on this species, with its synonymy and figures of the head and skull, given by P. L. SCLATER, P. Z. S. 1890, pp. 354-357, woodcuts.

Æpyceros petersi: head figured by P. L. SCLATER, *t. c.* p. 460, woodcut.
Cephalophus spadix, n. sp., F. W. TRUE, P. U. S. Nat. Mus. xiii, pp. 227 & 228, Kilima-njaro, E. Africa.

Tragelaphus spekei: female figured by P. L. SCLATER, P. Z. S. 1890, pl. xlvii.

Gazella przewalskii, n. n., E. BÜCHNER, Mém. biol. xiii, p. 161, = *G. cuvieri*, Przewal. [non Ogilby].

†*Gazella capricornis*, n. sp., A. RODLER & K. A. WEITHOFER, Denk. Ak. Wien. lvii, p. 767, Pliocene, Persia.

†*Antidorcas* (?) *antropatenes*, n. sp., RODLER & WEITHOFER, *t. c.*, *ibid.*

†*Tragelaphus* (?) *houtum-schindleri*, n. sp., RODLER & WEITHOFER, *t. c.* p. 768, *ibid.*

†*Palæoreas torticornis* (Aymard). *Palæoreas montiscaroli* identified by FORSYTH-MAJOR (*suprà*, p. 5) with this species, which is for the first time referred to *Palæoreas*.

k. GIRAFFIDÆ.

†*Alcicephalus neumayri*, n. g. & sp., A. RODLER & K. A. WEITHOFER, Denk. Ak. Wien. lvii, pp. 754 & 758, Pliocene, Persia.

†*Alcicephalus caelophrys*, n. sp., RODLER & WEITHOFER, *t. c.* p. 761, *ibid.*

l. CERVIDÆ.

For the American extinct genera *Blustomeryx* and *Cosoryx*, see SCOTT & OSBORN, *suprà*, p. 15.

ROGER, —. Ueber die Hirsche. CB. Ver. Regensb. 1887, pp. 50–93, pls. ii & iii. [Omitted from Zool. Rec. xxiv.]

A review of the recent genera, and more important species, with notices of allied fossil forms.

Cervus elaphus: abnormal antlers from Asia Minor referred to this species are described and figured by R. LYDEKKER, P. Z. S. 1890, pp. 363–365, pl. xxx.

†*Cervus giganteus* (*euryceros*): W. DAMES, Z. geol. Ges. p. 171, records a skull from interglacial beds near Berlin. See also Z. Naturw. lxiii, p. 435.

†*Cervus curvicornis*, n. sp., H. FILHOL, Bibl. haut. études, xxxvi, 1, p. 280, Miocene, Sansan.

†*Cervus dubius*, n. sp., FILHOL, *t. c.* p. 282, *ibid.*

†*Cervus nouleti*, n. sp., FILHOL, *t. c.*, *ibid.*

†*Cervus crassus*, n. sp., FILHOL, *t. c.* p. 283, *ibid.*

†*Cervus larteti*, n. sp., FILHOL, *t. c.*, *ibid.*

Alces machlis and *Rangifer tarandus*. The following paragraph is taken from 'The Times' of January 2, 1891:—"The total number of elk killed in Norway last year was 850, of which 515 were male and 335 female, and of the eleven provinces in which they were killed, northern Trondhjem

contributed 303. The number of reindeer killed during the same period was 468, and 143 of them were killed in the province of Romsdale. The number of elk killed in Sweden during the same period was 1782, as against 2097 and 2178 in the two preceding years, and it has been remarked for some time that the number of elk in Sweden has been diminishing.

Cariacus antisensis, note on, with figure, by E. SCHAÄF, Zool. Gart. xxxi, pp. 226-234.

Moschus sifanicus, n. sp., E. BÜCHNER, Mém. biol. xiii, p. 162, Kansu, N. W. China.

†*Palæomeryx sansaniensis*, n. sp., H. FILHOL, t. c. p. 255, Mid. Miocene, Sansan.

†*Palæomeryx minor*, n. sp., FILHOL, t. c. p. 261, *ibid.*

‡*Morphelaphus sansaniensis*, n. g. & sp., FILHOL, t. c. p. 262, *ibid.*

‡†*Strogulognathus*, n. n., FILHOL, t. c. p. 265, *ibid.*, to replace *Platyprosopos*, preoccupied [should be *Strongylognathus*, R. L.].

‡†*Palæocervus sansaniensis*, n. g. & sp., FILHOL, t. c. p. 285, *ibid.*

m. ANOPLOTHERIIDÆ.

‡†*Paradoxodon inermis*, n. g. & sp., H. FILHOL, Bull. Soc. Philom. (8) ii, pp. 133 & 134, woodcut, Quercy Phosphorites. Provisionally placed in this family.

†*Xiphodontotherium primævum*: a note on its dentition by H. FILHOL. t. c. pp. 178 & 179.

n. COTYLOPIDÆ.

SCOTT, W. B. Beiträge zur Kenntniss der *Oreodontidæ*. Morph. JB, xvi, pp. 319-395, pls. xii-xvi, woodcuts.

A detailed memoir on the skeletal anatomy of the various genera of this family, accompanied by figures of the skull and other parts of the skeleton. The various genera are arranged in three subfamilies, with the following characters:—

- I. Upper molars with five crescents *Protoreontinæ*.
- II. Upper molars with four crescents.
 1. Orbits closed, a lachrymal fossa, no diastema, all the premolars simpler than the molars, outer wall of upper molars flattened *Oreodontinæ*.
 2. Orbits open, no lachrymal fossa, a diastema, the last premolar molariform, outer wall of upper molars concave and inclined inwards *Agriochærinæ*.

See also SCOTT & OSBORN, p. 15.

o. ANTHRACOTHERIIDÆ.

†*Hyopotamus deflectus*, n. sp., O. C. MARSH, Am. J. Sci. (3) xxxix, pp. 524 & 525, Miocene, Dakota.

†*Anthracotherium monsvialense* : A. GAUDRY, Bull. Soc. géol. (3) xviii, pp. 255–257, has a note on the specimen described under this name by Zigno [see Zool. Rec. xxvi, *Mamm.* p. 44], and concludes that the number of teeth in the jaw is not due to incorrect restoration. Instead, however, of the teeth being reckoned as i. 2, c. 1, p. 4, m. 4, he would class them as i. 3, c. 1, p. 4, m. 3; the last premolar (or ? milk-molar) being molariform.

‡*Taumastognathus* [? *Thaumastognathus*] *quercyi*, n. g. & sp., H. FILHOL, Bull. Soc. Philom. (8) ii, pp. 34–38, Quercy Phosphorites.

†*Cebochoerus minor* : mandible from the Quercy Phosphorites described and figured by H. FILHOL, *t. c.* pp. 123–126, woodcuts.

p. SUIDÆ.

Sus celebensis, var. *philippensis* : A. NEHRING, SB. nat. Fr. 1890, pp. 8–11, has notes on a lower jaw from the Philippines which may belong to this species.

†*Hyotheium meissneri*, see HOFMANN, *suprà*, p. 7.

q. HIPPOPOTAMIDÆ.

POMEL, A. Sur les Hippopotames fossiles de l'Algerie. C.R. cx, pp. 1112–1117.

Describes remains of *Hippopotamus hipponensis*, of an unnamed species, of a new species, and of *H. amphibius*.

†*Hippopotamus sirensis*, n. sp., POMEL, *t. c.* p. 1114, Pleistoceno, Algeria.

7. CETACEA.

COOKS, A. H. The Finwhale Fishery off the Lapland Coast. Zool. (3) xvi, pp. 321–324.

COPE, E. D. The *Cetacea*. Am. Nat. xxiv, pp. 600–616, pls. xx–xxii, woodcuts.

A critical paper on the classification of the *Cetacea*, with especial reference to the North American fossil forms. The author considers that there are two distinct types of Zeuglodonts, for one of which the term *Doryodon* is adopted. The *Squalodontidae* are divided into *Squalodon* and *Trirhizodon*, according as to whether all the hinder cheek-teeth are two-rooted, or whether some of them have three roots. Several fossil American genera are referred to the *Platanistidae*, among which *Agabelus* is edentulous. The term *Anarnacus* is adopted in place of *Hyperoödon*. The genus *Physeterula*, Van Beneden, from the Antwerp Crag, is identified with *Cogia*. In the *Balanidae*, *Plesiocetus* is regarded as distinct from *Cetotherium*, on account of its elongated

frontals and parietals; and *Eubalæna*, *Halibalæna*, *Balænula*, and *Balænotus* are identified with *Palæocetus*. The paper concludes with a synopsis of all the North American fossil species.

GERSTÄCKER, A. Das Skelet der Döglings (*Hyperoödon rostratus*); ein Beitrag zur Osteologie der Cetaceen, und zur vergleichenden Anatomie der Wirbelsäule. Leipsic: 1887, 4to, 175 pp., 2 pls. [Omitted from Zool. Rec. xxiv.]

KÜKENTHAL, W. Cetologische Notiz. Anat. Anz. v, pp. 709 & 710.

Figures the manus of an embryo of *Balænoptera*, in which there are rudiments of a digit occupying the position of the third of the typical pentadactylous manus; thus indicating that it is this digit (and not, as generally considered, the pollex) which has disappeared in this and the allied genera.

—. Ueber die Hand der Cetaceen (dritte Mitteilung). *Op. cit.* ii, pp. 44-52, woodcuts.

Describes and figures the structure of the carpus and phalanges in several species.

—. Ueber Reste eines Hautpanzers bei Zahnwalen. *Op. cit.* v, pp. 237-240.

Records tubercles in the skin of *Neomeris* and *Phocaena spinipinnis*, which are considered to be remnants of a dermal armour possessed by the terrestrial ancestors of the *Cetacea*.

POUCHET, G., C.R. Soc. Biol. (9) ii, pp. 686-688, has notes on the record of two Whales stranded in the 7th and 9th centuries.

REITTERER, E. Sur quelques States de l'Évolution du Gland des Cétacés. C.R. Soc. Biol. (9) ii, pp. 653 & 654.

SOUTHWELL, T. Notes on the Seal and Whale Fishery of 1889. Zool. (3) xvi, pp. 81-85.

THOMPSON, D'ARCY W. On the Cetacean Larynx. Stud. Mus. Dundee, i, art. xi, pp. 1-8, woodcuts.

It is shown that the so-called arytenoid cartilage of the *Odontoceti* was originally duplex, one part being the true arytenoid, and the other termed the supra-arytenoid. It is considered probable that a similar condition obtains in the *Mystacoceti*.

a. BALÆNIDÆ.

SACCO, F. Sopra una Mandibola di *Balænoptera* dell' Astigiana. Atti Acc. Tor. xxv, pp. 612-618, pl. ivbis.

Describes and figures part of the mandible of a species of *Balænopteroïd* from the Pliocene of Astigiana, under the name of *Balænoptera* (*Plesiocetus*) *cortesi*, n. var. *portisi*.

Bulæna biscayensis: G. POUCHET, C.R. Soc. Biol. (9) ii, pp. 705-708,

has remarks on photographs of two specimens stranded on the French coasts.

†*Balaenoptera (Plesiocetus) cortesi*, n. var. *portisi*, SACCO, l. c., Pliocene, Italy.

b. ZEUGLODONTIDÆ.

THOMPSON, D'ARCY W. On the Systematic Position of *Zeuglodon*. Stud. Mus. Dundee, i, art. ix, pp. 1-8, woodcuts.

From the characters of the skull, teeth, vertebræ, and limb-bones, it is argued that the Zeuglodonts have nothing to do with the *Cetacea*, but are allied to the *Carnivora Pinnipedia*.

— Faut-il associer les Zeuglodontes aux Cétacés? C.R. Congrès Internat. Zool. 1889, pp. 225-232.

Another contribution to the same subject.

c. PHYSETERIDÆ.

POUCHET, G., & CHAVES, F. A. Des Formes extérieures du Cachalot. J. de l'Anat. Phys. xxvi, pp. 270-272, woodcut.

Describes, with figures, photographs of the Cachalot, and states that the ordinary figures, in which the muzzle is abruptly truncated, are incorrect.

POUCHET, G., & BEAUREGARD, —. Sur un Échouement de Cachalot a l'Isle de Ré. C.R. cx, pp. 722 & 723.

Describes a stranded male specimen.

d. DELPHINIDÆ.

TRUE, F. W. Observations on the Life History of the Bottlenose Porpoise. P. U. S. Nat. Mus. xiii, pp. 197-203.

Observations on specimens of *Tursiops tursio* captured at the fishery at Hatteras, N. Carolina. Dimensions are given, and the relative number of male and female individuals captured recorded.

WOODHEAD, G. S., & GRAY, R. W. On the Stomach of the Narwhal (*Monodon monoceros*). P. R. Soc. Edinb. xvi, pp. 792-807, pls. i-iv.

A detailed anatomical and histological account.

†*Mesoplodon floridæ*, n. sp., E. T. NEWTON, Q. J. Geol. Soc. xlvi, pp. 448-450, pl. xviii, fig. 7, Red Crag.

†*Mesoplodon scaphoides*, n. sp., NEWTON, l. c., pp. 450 & 451, pl. xviii, fig. 8, *ibid*.

d. SQUALODONTIDÆ.

†*Squalodon quarternarium*: a tooth from an Italian cave figured by A. ISSEL, Ann. Mus. Genov (2) ix, p. 10 (*vide suprâ*, p. 7).

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8. *SIRENIA*.

COPE, E. D. The Extinct *Sirenia*. Am. Nat. xxiv, pp. 697-702, pls. xxv & xxvi, woodcuts.

A review of the fossil forms referred to the order.

DOLLO, L. Première Note sur les Siréniens de Boom. Bull. Soc. Belg. Géol. iii, pp. 415-421, woodcut.

Describes Sirenian remains from the Miocene of Boom, which are referred to the *Halitheriidae*, with the undermentioned name :—

√†*Miosiren kocki*, n. g. & sp., DOLLO, *t. c.* p. 420, Miocene, Boom, Belgium.

9. *EDENTATA*.

ORYCTEROPODIDÆ.

THOMAS, O. A Milk-Dentition in *Orycteropus*. P. R. Soc. xlvii, pp. 246-248, pl. viii.

An extremely important paper, showing the presence of well-developed milk-teeth in the Aard-vark. Some observations on the affinities of the genus are given at the conclusion.

10. *MARSUPIALIA*.

LECHE, W. Zur Charakteristik der extra-uterinen Entwicklung der Beutelhiiere. Biol. Fören. ii, pp. 112-116.

Shows that the circular sucking mouth of young Marsupials is a secondary character developed after their transference to the maternal pouch, the uterine foetuses having long and well-developed lips.

PARKER, W. K. On the Skull of *Tarsipes rostratus*. Stud. Mus. Dundee, i, art. vii, 5 pp., 1 pl.

The aberrant nature of the skull as compared with that of other members of the *Phalangeridae* is noticed in detail.

THOMPSON, D'ARCY W. Note on the Viscera of *Tarsipes*. *T. c.* art. viii, pp. 7-9, woodcuts.

A figure of the stomach is given, this organ differing from that of other Marsupials in being bilocular. The liver and tongue are also described and figured.

XI. *MULTITUBERCULATA*.

AMEGHINO, F. Los Plagialacideos Argentinos, etc. Bol. Inst. Geogr. Argent. xi, pp. 143-201, woodcuts.

The author describes (with figures) a number of Mammalian remains from the Tertiaries of Argentina and Patagonia, which are placed in the

same group as the *Plagiaulacidae* (*Multituberculata*). Some of these have been previously named, while others are new. Several differences from the typical *Multituberculata* (such as a variation in the number of the teeth) are pointed out, but these are not considered of sufficient importance to separate them from the group, which is placed among the Diprotodont Marsupials. A general account is given of the typical *Multituberculata*. (*Vide infra*.)

ABDERITIDÆ.

† *Dipilus spegazzinii*, n. g. & sp., F. AMEGHINO, *t. c.* pp. 153-155, figs. 5 & 6, Tertiary, Patagonia. Also figured by TROUESSART (*vide supra*, p. 17).

† *Dipilus bergi*, n. sp., AMEGHINO, *t. c.* p. 155, fig. 7, *ibid*.

† *Pichipilus osborni*, n. g. & sp., AMEGHINO, *t. c.* pp. 155 & 156, Tertiary, Argentina.

† *Epanorthus holmbergi*, n. sp., AMEGHINO, *t. c.* p. 157, fig. 8, *ibid*.

† *Tideus trisulcatus*, n. g. & sp., AMEGHINO, *t. c.* p. 157, *ibid*.

A V E S.

BY

R. BOWDLER SHARPE, LL.D.

AFTER a lapse of several years, the Recorder has been asked to write the summary of the work done by Ornithologists in 1890. He trusts that this record may be found tolerably complete, but the enormous increase of periodical literature which has taken place since he last attempted an Avian record, renders him fearful that, with all his researches, he may have missed some essays on Ornithology. He will, therefore, be grateful to any one who will inform him of any errors and omissions, that he may incorporate the papers in next year's 'Record.' The order of Classification followed is that proposed in the Recorder's 'Review of Recent Classifications of Birds.'

PALEARCTIC REGION. See Backhouse, Brusina, Dresser, Dubois, Dubaleu, Gadeau de Kerville, Giglioli, Givois, Graham, Harting, Helm, Keller, Koenig, Lilford, Matschie, Meyer, Middendorf, Montessus, Pleske, Radde, Reichenow, Romita, Schalow, Seebohm, Stevenson, Tristram, Tschusi, Walter, Zaroudnoi.

ETHIOPIAN REGION. See Büttikofer, Hartlaub, Jameson, Newton, Reichenow, Sharpe, Shelley.

INDIAN REGION. See Barnes, Blasius, Elliot, Modigliani, Murray, Oates, Oustalet, Reid, Salvadori, Seebohm, Sharpe, Steere, Vorderman, Whitehead.

AUSTRALIAN REGION. See Cairns, Campbell, De Vis, Goodwin, North, Ramsay, Salvadori, Sandager, Stejneger, Wilson, Woodford.

NEARCTIC REGION. See Anthony, Belding, Bryant, Chapman, Cherie, Clarke, Keeler, Loomis, Mearns, Merriam, Nansen, Rives, Scott, Townsend.

NEOTROPICAL REGION. See Berlepsch, Cory, Godman, Herrera, Riker, Salvin, Sharpe, Steuen, Stone.

ANATOMY. See Beddard, Bignon, Coues, Fürbringer, Gadow, Parker, Paterson, Plateau, Roché, Shufeldt, Zehntner.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the journal or work referred to.

OSTEOLOGY. See Beddard, Coues, Lucas, Lydekker, Meyer, Parker, Shufeldt.

OLOGY. See Hartert, Kutter, Nicholsky, North.

NEOSSOLOGY. See Oates.

PTERYLOGRAPHY. See Blanchard, Keeler, Kirk, Parker, Pycraft, Slater.

BIOGRAPHY. See Dallas, Gurney, Hancock, Parker, Cecil Smith, Taczanowski, Westerman.

LITERATURE. See Chernel, Schalow, Tschusi zu Schmidhofen.

THE GENERAL SUBJECT,

WITH TITLES OF SEPARATE WORKS AND OF THE MORE IMPORTANT PAPERS PUBLISHED IN PROCEEDINGS OF SOCIETIES, &c.

Third Report of the Committee, consisting of PROFESSOR FLOWER (Chairman), Mr. D. MORRIS (Secretary), Mr. CARRUTHERS, Dr. SLATER, Mr. THISELTON-DYER, Dr. SHARP, Mr. F. DU CANE GODMAN, PROFESSOR NEWTON, Dr. GÜNTHER, and COLONEL FEILDEN, appointed for the purpose of reporting on the present state of our knowledge of the Zoology and Botany of the West India Islands, and taking steps to investigate ascertained deficiencies in the Fauna and Flora. Rep. Brit. Ass. 1890, pp. 447-449. [*Cf.* Zool. Rec. xxvi, *Aves*, p. 3.]

Report of the Committee, consisting of PROFESSOR NEWTON, Mr. JOHN CORDEAUX (Secretary), Mr. J. A. HARVIE-BROWN, Mr. R. M. BARRINGTON, Mr. W. EAGLE CLARKE, and the Rev. E. P. KNUBLEY, appointed to make a digest of Observations on Migration of Birds at Lighthouses and Lightvessels, which have been carried on from 1879 to 1887, inclusive, by the Migrations Committee of the British Association (with the consent of the Master and Elder Brethren of the Trinity House and the Commissioners of Northern and Irish Lights), and to report upon the same. *T. c.* p. 464. [*Cf.* Zool. Rec. xxvi, *Aves*, p. 3.]

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Beobachtungen an Vögeln und Insekten. JB. förstl.-phänol. Stationen Deutschlands. iv. Jahrgang, 1888, pp. 81-114.

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- . On the Maximilian Types of South American Birds in the American Museum of Natural History. *Bull. Am. Mus. Nat. Hist.* ii, pp. 209-276. [Omitted from *Zool. Rec.* xxvi.]
- . [See also *Troglodytidae*, *Icteridae*.]
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—. See H. N. RIDLEY'S Notes on the Zoology of Fernando Noronha. *Aves*. J. L. S. xx, pp. 477-480. [*Vireonidæ*.]

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—. [See also WYATT, C. W.]

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[*Cypselidae*.]

THE GENERAL SUBJECT.

Subclass RATITÆ.

Order RHEIFORMES.

Rhea darwini in Tarapacà (20' N. Lat.) ; P. L. SCLATER, P. Z. S. 1890, p. 412.

Order STRUTHIONIFORMES.

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Order CASUARIIFORMES.

Casuarus australis, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xv.

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SubclassCARINATÆ.

OrderCRYPTURIFORMES.

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OrderGALLIFORMES.

SuborderMEGAPODII.

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SuborderCRACES.

† *Salpiza*, nom. emend. pro "*Salpiza*, Wagler" ; F. HEINE, Nomencl. Mus. Hein. p. 301.

Penelope superciliaris, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv.

Pipile jacutinga, skeleton figured ; id. t. c. pl. cxxxvii.

SuborderPHASIANI.

FamilyPHASIANIDÆ.

† *Lochnophasis*, nom. emend. pro "*Gallophasis*, Hodgs." ; F. HEINE, Nomencl. Mus. Hein. p. 298.

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Bonasia bonasia and *B. sylvestris* ; V. TSCHUSI ZU SCHMIDHOFEN, Orn. Jahrb. i, pp. 161-163.

Family PERDICIDÆ.

Pternistes humboldti and *P. leucoparæus*, *Francolinus altumi* and *F. hildebrandti*, remarks on ; A. REICHENOW, J. f. O. 1890, p. 77.

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Lophortyx californicus, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxxxvi, fig. 2.

↓ *Compsortyx*, nom. emend. pro "*Excalfactoria*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 292.

↓ *Plectroperdix*, nom. emend. pro "*Hepburnia*, Bp." ; *id. t. c.* p. 293.

Coturnix pectoralis, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvi, fig. 10.

Family NUMIDIDÆ.

Numida sp. from Matabele Land : head figured ; P. L. SCLATER, P. Z. S. 1890, pp. 86 & 87, pl. xii.

Family MELEAGRIDÆ.

Meleagris gallopavo osceola, n. subsp., Florida ; W. E. D. SCOTT, Auk, vii, p. 376.

Suborder HEMIPODII.

Turnix beccarii, Salvad., = *T. maculosa* ; W. R. OGILVIE-GRANT, Ibis, 1890, pp. 344 & 345 : is distinct ; T. SALVADORI, *t. c.* p. 130. *T. melanogaster*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvi, fig. 11.

• *Areorix*, nom. emend. pro "*Areoturnix*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 290.

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Pterocles exustus, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxxxvi, fig. 1. *P. senegallus*, *P. coronatus*, *P. fasciatus*, *P. lichtensteini*, *P. exustus*, *P. alchata* ; heads figured : J. A. MURRAY, Avif. Brit. Ind. plate. *P. arenaria*, n. var. *magna*, Central Asia ; N. ZARUDNOI, Bull. Soc. Phys. Mosc. 1889, p. 811.

↓ *Pterygocys*, nom. emend. pro "*Pteroclorus*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 288.

Order COLUMBIFORMES.

Suborder COLUMBÆ.

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Five groups of *Macropygia* are recognized with 26 species, *Reinwardtenas* with 3 species, and *Turacæna* with 2 species. A good tabular geographical list is given.

Macropygia swinhoii, n. sp., Hainan ; *id. t. c.* p. 218. *M. modiglianii* figured ; E. MODIGLIANI, Viagg. a Nias, taf. xiv.

✓ *Coryphænas*, n. g., type *C. crassirostris* (Gould) ; R. G. WARDLAW RAMSAY, Ibis, 1890, pp. 246 & 247.

Columba ænas breeding in Co. Antrim ; R. L. PRÆGER, Rep. Belfast Nat. Field Club (2) iii, p. 211. *C. livia*, under-mandibles figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, taf. cxxxix. *C. bollei*, egg figured ; A. KÖNIG, J. f. O. 1890, taf. viii, fig. 12.

Carpophaga consobrina figured ; E. MODIGLIANI, Viagg. a Nias, taf. xv. *Ocyphaps lophotes*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiv, fig. 10.

Turtur orientalis in Yorkshire ; J. BACKHOUSE, Naturalist, 1890, p. 258 : H. SEEBOHM, P. Z. S. 1890, p. 361.

✓ *Calotreron*, nom. emend. pro "*Palumbæna*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 275.

✓ *Tryzusa*, nom. emend. pro "*Turturænas*, Bp." ; *id. t. c.* p. 276.

✓ *Haplenas*, nom. emend. pro "*Turacæna*, Bp." ; *id. t. c.* p. 278.

✓ *Coccyzenas*, nom. emend. pro "*Reinwardtæna*, Bp." ; *id. ibid.*

✓ *Curotreron*, nom. emend. pro "*Kurutreron*, Bp." ; *id. t. c.* p. 280.

✓ *Terenotreron*, nom. emend. pro "*Thouarsitreron*, Bp." ; *id. ibid.*

✓ *Phassa*, nom. emend. pro "*Rhamphiculus*, Bp." ; *id. t. c.* p. 281.

✓ *Pecilotreron*, nom. emend. pro "*Sylphidæna*, Bp." ; *id. ibid.*

- ✓ *Rhamphotreron*, nom. emend. pro "*Toria*, Hodgs."; *id. t. c.* p. 279.
 ✓ *Leptopelia*, nom. emend. pro "*Talpacotia*, Bp."; *id. t. c.* p. 283.
 ✓ *Micropelia*, nom. emend. pro "*Scardafella*, Bp."; *id. t. c.* p. 283.
Zenaidura clarionensis, n. sp., Clarion I., Lower California; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 133.
Chlorænas plumbea bogotensis, n. subsp., Colombia; H. v. BERLEPSCH & P. LEVERKÜHN, Ornith., vi, p. 32.
Geotrygon martinica in Florida; W. E. D. SCOTT, Auk, 1890, p. 90.

Suborder DIDI.

Didus ineptus in a cavern in Mauritius: the occurrence disproved; E. NEWTON, P. Z. S. 1890, pp. 402 & 403.

Order OPISTHOCOMIFORMES.

Opisthocomus cristatus: notes on the morphology of the Hoatzin; W. K. PARKER, P. Z. S. 1890, pp. 44-46: habits, J. J. QUELCH, Ibis, 1890, pp. 327-335.

Order RALLIFORMES.

Family RALLIDÆ.

- ✓ *Lophophalaris*, nom. emend. pro "*Lupha*, Reichenb."; F. HEINE, Nomencl. Mus. Hein. p. 317.
Pisynolymnas, nom. emend. pro "*Erythra*, Reichenb."; *Sarothrura*, nom. emend. pro "*Corethrura*, Reichenb., nec Gray": *id. t. c.* p. 319.
 ✓ *Ortygops*, nom. emend. pro "*Coturnicops*, Bp."; *id. t. c.* p. 320.
 ✓ *Erythrolimnas*, nom. emend. pro "*Rufirallus*, Bp."; *id. t. c.* p. 320.
 ✓ *Galeolimnas*, nom. emend. pro "*Mustelirallus*, Bp."; *id. t. c.* p. 320.
 ✓ *Donacophilus*, nom. emend. pro "*Laterirallus*"; A. REICHENOW, *t. c.* p. 320.
 ✓ *Ortygonax*, n. g. (without diagnosis). Type, *O. rhytirhynchus* (V.); F. HEINE, *t. c.* p. 321.
 ✓ *Donacias*, nom. emend. pro "*Lewinia*, Bp."; *id. t. c.* p. 321.
Porphyrio martinicus in Hampshire; J. H. GURNEY, Zoologist (3) xiv, pp. 74 & 75. *P. smaragdinus* and *P. caeruleus* in Ireland; A. G. MORE, *t. c.* pp. 24 & 25.
Ionornis martinica, use of claws on wings in nestlings; R. W. SHUFFELDT, Ibis, 1890, p. 128.
Tribonyx ventralis, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xvii, fig. 4. *T. mortieri*, egg figured; *id. t. c.* pl. xix, fig. 4.
Gallirex cristatus in Guzerat; H. LITTLEDALE, J. Bomb. N. H. Soc. v, p. 416.
Ocydromus sylvestris, nest described and egg figured; A. J. NORTH, Rec. Aust. Mus. i, p. 37, pl. i, fig. 3.
Rallus aquaticus in Norfolk; M. C. H. BIRD, Zool. 1890, pp. 458-460.

† *Calamodromas*, nom. emend. pro "*Rougetius*, Bp."; A. REICHENOW, Nomencl. Mus. Hein. p. 322.

Rallina tricolor, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xvi, fig. 5.

Erythra quadristrigata, egg figured; *id. t. c.* pl. xvi, fig. 7.

Porzana maruella, distribution in England; O. V. APLIN, Zool. 1890, pp. 401-417: in Norfolk; M. C. H. BIRD, Zool. 1890, pp. 458-460. *P. pusilla* (Pall.), an Eastern form of *P. bailloni*; W. R. OGILVIE-GRANT, Ann. N. H. (6) v, pp. 80-82. *P. coturniculus* must be compared with *P. spilonota*; R. RIDGWAY, P. U. S. Nat. Mus. xiii, pp. 309-311.

Crex pratensis in Norfolk; M. C. H. BIRD, Zool. 1890, pp. 458-460: figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xiv.

Podica belongs to the *Heliornithidæ*; F. E. BEDDARD, *infra*.

Aramides ypecaha, figure of skeleton; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxxxii.

Order HELIORNITHIFORMES.

BEDDARD, F. E. On the Anatomy of *Podica senegalensis*. P. Z. S. 1890, pp. 425-443, pl. xxxix.

Order HESPERORNITHIFORMES.

FÜRBRINGER, M. Ueber die systematische Stellung der *Hesperornithidæ*.

MB. Deutsch. Ver. Schutze, 1890, pp. 488-513.

Hesperornis: on its systematic position; D'ARCY W. THOMPSON, Stud. Zool. Dundee, i, No. 10, pp. 1-15. [*Of* SHUFELDT, Nature, xliii, p. 176; HELM, *t. c.* p. 369.]

Order PODICIPEDIDIFORMES.

For Osteology, see SHUFELDT, R. W.

† *Colymbetes* [preoccupied in *Coleoptera*], nom. emend. pro "*Polioccephalus*, Selby"; F. HEINE, Nomencl. Mus. Hein. p. 364.

Order COLYMBIFORMES.

For Osteology, see SHUFELDT, R. W.

Colymbus adamsi, distinctive characters from *C. glacialis*; R. RIDGWAY, Ibis, 1890, p. 129.

Order PROCELLARIIFORMES.

Family DIOMEDEIDÆ.

GADOW, H. The stomach of the *Tubinares*. Zool. Jahrb. v, pp. 644 & 645, taf. xlv.

Diomedea exulans, notes on nestling; W. L. BULLER, Tr. N. Z. Inst. xxii, pp. 340-342.

Family PROCELLARIDÆ.

Ossifraga gigantea, habits ; K. VON DEN STEINEN, MB. Deutsch. Ver. Schutze, 1890, pp. 187-194.

Puffinus gavia in California ; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, p. 87. *P. zealandicus*, n. sp., Mokohinou Is., New Zealand ; F. SANDAGER, Tr. N. Z. Inst. xxii, p. 291. *P. griseus* in California ; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, p. 87 : at Hastings ; W. BORRER, Zool. 1890, pp. 436 & 437. *P. auricularis*, n. sp., Clarion I. ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, pp. 133 & 134. *P. nugaz*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xxi, fig. 3.

Fulmarus glacialis, its olfactory lobes ; A. KLINKOWSTROM, Biol. Fören. Forh. Stockh. iii, pp. 10 & 11. *F. g. glupsischa* in British Columbia ; F. M. CHAPMAN, Bull. Am. Mus. Nat. Hist. iii, 1890, p. 130.

↓ *Zalias*, nom. emend. pro "*Thiellus*, Reichenb." ; F. HEINE, Nomencl. Mus. Hein. p. 362.

↓ *Cymatobolus*, nom. emend. pro "*Majaqueus*, Reichenb." ; *id. t. c.* p. 363.

Bulweria columbina, egg figured ; A. KENIG, J. f. O. 1890, pl. viii, fig. 11 : in the Sandwich Islands ; L. STEJNEGER, P. U. S. Nat. Mus. xii, p. 378.

Æstrelata mollis from Ilho de Baixo ; J. J. DALGLEISH, Ibis, 1890, p. 386.

Æstrelata hesitata : its extinction in Dominica ; H. W. FEILDEN, Tr. Norfolk N. H. Soc. v, p. 24. *Æ. torquata* in Wales ; J. E. HARTING, Zool. 1890, pp. 454 & 455.

Pagodroma nivea (*novægeorgica*, n. subsp. ?), K. VON DER STEINEN, Deutsch. Exped. Int. Polarf. ii, pp. 250 & 251.

Oceanodroma furcata in California ; T. S. PALMER, Proc. Cal. Ac. Sci. (2) ii, p. 88. *O. socorroensis*, n. sp., Socorro I. ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 134.

Cymochorhea sp. : subfossil bones from Peru ; E. T. NEWTON, P. Z. S. 1890, pp. 375 & 376.

Procellaria pelagica and *C. leucorrhœa* do not breed in their first year ; H. A. MACPHERSON, Naturalist, 1890, p. 48.

Order ALCIFORMES.

For Osteology, see SHUFELDT, R. W.

Alca impennis : notes on remains found in Funk I. ; F. A. LUCAS, Rep. U. S. Nat. Mus. 1887-88, pp. 493-529, pls. lxxi-lxxiii. *A. torda* in North Carolina ; A. K. FISHER, Auk, vii, p. 203 : figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xii.

Order LARIFORMES.

For Osteology, see SHUFELDT, R. W.

Family STERCORARIIDÆ.

Stercorarius pomarinus in California ; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, p. 87.

Lestris catarrhactes on Foula ; R. M. BARRINGTON, Zool. 1890, pp. 297-306.

Family LARIDÆ.

✓ *Einalia*, nom. emend. pro "*Laroides*, Brehm." ; F. HEINE, Nomencl. Mus. Hein. p. 358.

✓ *Melanolarus*, nom. emend. pro "*Melagavia*, Bp." ; *id. t. c.* p. 359.

Larus pacificus, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xx, fig. 1.

Xema novæ-hollandiæ, egg figured ; *id. t. c.* pl. xx, fig. 4.

Subfam. STERNINÆ.

✓ *Pomatochelidon*, nom. emend. pro "*Seena*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 355.

Sylochelidon caspius, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xx, fig. 3.

Sterna bergii, egg figured ; *id. t. c.* pl. xix, fig. 2. *S. anglica*, egg figured ; *id. t. c.* pl. xvii, fig. 2. *S. fuliginosa*, egg figured ; *id. t. c.* pl. xxi, fig. 1. *S. lunata*, from Kauai, Sandwich Is. ; L. STEJNEGER, P. U. S. Nat. Mus. xii, p. 379.

Sternula sinensis, breeding in N. S. Wales ; A. J. NORTH, Rec. Austr. Mus. i, p. 39, pl. i, fig. 1 (egg).

Gygis candida, egg figured ; *id.* Nests and Eggs Austr. B. pl. xxi, fig. 4.

Anous stolidus, eggs figured ; *id. t. c.* pl. xxi, fig. 2 : *A. melanogenys*, *A. cinereus*, figs. 5 & 6.

Order CHARADRIIFORMES.

Suborder CHARADRII.

Family HÆMATOPODIDÆ.

Hæmatopus ostralegus figured ; LORD LILFORD, Col. Fig. Br. Birds, part xii. *H. unicolor*, egg figured ; A. J. NORTH, Notes and Eggs Austr. B. pl. xx, fig. 2.

Family CHARADRIIDÆ.

✓ *Lobibyx*, nom. emend. pro "*Lobivanellus*, Reichenb." ; F. HEINE, Nomencl. Mus. Hein. p. 334.

✓ *Dilobus*, nom. emend. pro "*Lobipluvia*, Bp." ; *id. t. c.* p. 335.

✓ *Hyetoceryx*, nom. emend. pro "*Pluriorhynchus*, Bp." ; *id. t. c.* p. 336.

Anarhynchus frontalis, notes on ; H. GADOW, Zool. Jahrb. v, pp. 633-635, taf. xliii.

Charadrius plumialis, figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii. *C. morinellus* in the Altwater Mountains ; E. C. F. RZEHAKE, MT. orn. Ver. Wien, xiv, pp. 134 & 135.

Eudromias australis, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvi, fig. 2.

Ægialitis asiatica, in Norfolk ; T. SOUTHWELL, Zool. 1890, pp. 311 & 312. *Æ. monachus*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvi, fig. 1. *Æ. nigrifrons*, fig. 4, *Æ. ruficapillus*, fig. 6.

Erythrogonyx cinctus, egg figured ; *id. t. c.* pl. xvi, fig. 5.

Sarcophorus pectoralis, egg figured ; *id. t. c.* pl. xvii, fig. 6.

Family SCOLOPACIDÆ.

See REICHENOW, A.

Himantopus melanopterus, figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii. *H. leucocephalus*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvii, fig. 3.

Rhimphalea [preoccupied in *Lepidoptera*], nom. emend. pro "*Stiltia*, Bp.;" ; F. HEINE, Nomencl. Mus. Hein. p. 338.

Recurvirostra avocetta, figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii. *R. rubricollis*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvii, fig. 1.

Rhynchosimus, nom. emend. pro "*Terekia*, Bp.;" ; F. HEINE, Nomencl. Mus. Hein. p. 326.

Ægialodes, nom. emend. pro "*Gambetta*, Kaup.;" ; *id. t. c.* p. 327.

Actia [preoccupied in *Diptera*], nom. emend. pro "*Arquatella*, Baird" ; *id. t. c.* p. 329.

Numenius phaeopus, figure of skeleton ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxxxiii.

Limosa uropygialis, in Italy ; G. MARTORELLI, Atti Soc. Ital. xxxiii, pp. 21-40, taf. i. [Is *L. rufa*, Salvad., Ibis, 1891, p. 296.] Remarks on various species of *Limosa* ; G. MARTORELLI, *l. c.*

Tringa canutus figured (2 pls.) ; LORD LILFORD, Col. Fig. Br. Birds, pt. xii. *T. maculata* figured ; *id. op. cit.* pt. xiv.

Machetes pugnax, distribution in Lincolnshire ; J. CORDEAUX, Zool. 1890, pp. 204-209.

Totanus solitarius cinnamomeus, n. subsp., California ; W. BREWSTER, Auk, vii, pp. 377 & 378.

Scolopax rusticula and *S. gallinago*, notes on plumage ; W. R. OGILVIE-GRANT, Zool. 1890, pp. 161-164.

Rhynchæa australis, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvi, fig. 3.

Streptilus interpres figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xiv.

Lobipes hyperboreus, in Borneo ; A. H. EVERETT, Ibis, 1890, p. 263.

Suborder GLAREOLÆ.

Glareola grillaria, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xvi, fig. 9.

Suborder PARRÆ.

Parra gallinacea, egg figured ; A. J. NORTH, Nests and Eggs. Austr. B. pl. xvi, fig. 8.

Suborder ŒDICNEMI.

Œdicnemus grillarius, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xix, fig. 3.

Suborder OTIDES.

Comptosia, nom. emend. pro "*Afrotis*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 325.

Otis tetrax, in Norfolk ; T. SOUTHWELL, Zool. 1890, pp. 462 & 463.

Order GRUIFORMES.

Suborder GRUES.

Grus communis figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xii, *G. virgo* figured ; *id. t. c.* *G. melitensis*, n. sp. [fossil], from Malta ; R. LYDEKKER, P. Z. S. 1890, pp. 408 & 409, pl. xxxvi.

Suborder PSOPHIÆ.

BEDDARD, F. E. On the Structure of *Psophia*, and its Relation to other Birds. P. Z. S. 1890, pp. 329-341.

Suborder DICHOLOPHI.

Chunga burmeisteri, the heart figured ; F. E. BEDDARD, P. Z. S. 1890, p. 144, fig. 2.

Order PELARGIFORMES.

Suborder ARDEÆ.

✓ *Sirryctes*, n. g. (not diagnosed) ; type, *S. cyanocephalus* (Mol.) ; F. HEINE, Nomencl. Mus. Hein. p. 309.

✓ *Hydranassa* [already preoccupied in Birds], nom. emend. pro "*Demi-egretta*, Baird" ; *id. t. c.* p. 306.

✓ *Glaucerosdius*, nom. emend. pro "*Florida*, Baird" ; *id. t. c.* p. 307.

✓ *Doripomis*, nom. emend. pro "*Agamia*, Reichenb.;" ; *id. t. c.* p. 308.

↓ *Dupetor*, nom. emend. pro "*Ardeiralla*, Bp.;" ; *id. ibid.*

Florida cerulea, its parasites ; J. LEIDY, P. Ac. Philad. 1890, p. 63.

Ardea pacifica, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xviii, fig. 2.

Demigretta sacra, egg figured ; *id. t. c.* pl. xviii, fig. 5.

Ardea bubuleus figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii.

Butorides virescens, in Cornwall ; M. A. MATHEW, Zool. 1890, p. 105 ; J. E. HARTING, *t. c.* pp. 181 & 182.

Ardetta minuta, in Mecklenberg ; C. STRUCK, Arch. Ver. Mecklenb. xliii, p. 256.

Butorides macrorhyncha, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xviii, fig. 6.

Nycticorax caledonicus, egg figured ; *id. t. c.* pl. xviii, fig. 1.

Botaurus poicilopterus, egg figured ; *id. t. c.* pl. xviii, fig. 3. *B. lentiginosus*, vocal apparatus ; B. TORREU (translation), MB. Deutsch. Ver. Schutze, 1890, pp. 62-73, pls. iii & iv.

Suborder CICONII.

Ciconia nigra, in the Scilly Isles ; J. E. HARTING, Zool. 1890, p. 353.

Suborder PLATALEÆ.

Family PLATALEIDÆ.

✓ *Mystrothamphus*, nom. emend. pro "*Ajaja*, Reichenb.;" ; F. HEINE, Nomencl. Mus. Hein. p. 313.

✓ *Parnopsis*, nom. emend. pro "*Hagedashia*, Bp.;" ; *id. t. c.* p. 314.

Platalea leucorodia figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xii : skulls figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxxxv.

Family IBIDIDÆ.

Ibis æthiopica, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxxxiv.

Order PHÆNICOPTERIFORMES.

Phænicopterus ruber, notes on the species in Florida ; W. E. D. SCOTT, Auk, vii, pp. 221-226.

Order ANSERIFORMES.

GADOW, H. On the tracheal labyrinth of the Ducks. Zool. Jahrb. v, pp. 635 & 636.

See REICHENOW, A.

Oygnus falconeri, bones from Malta ; R. LYDEKKER, P. Z. S. 1890, pp. 408 & 409, pl. xxxvi.

✓ *Ptocas*, nom. emend. pro "*Rufibrenta*, Bp."; F. HEINE, Nomencl. Mus. Hein. p. 342.

Anser hyperboreus in Norway; R. COLLETT, Orn. Jahrb. i, p. 37.

✓ *Tanidiesthes*, nom. emend. pro "*Tanidiestes*, Reichenb."; *id. t. c.* p. 342.

✓ *Gennaeochen*, nom. emend. pro "*Radjah*, Reichenb."; *id. t. c.* p. 343.

✓ *Nettalopez*, nom. emend. pro "*Casarca*, Bp."; *id. t. c.* p. 344.

Adelonetta, nom. emend. pro "*Punanetta*, Bp."; *id. t. c.* p. 346.

✓ *Ilyonetta*, nom. emend. pro "*Nyroca*, Flem."; *id. t. c.* p. 347.

✓ *Melanonetta*, nom. emend. pro "*Melanitta*, Bp." (*nec Melonetta*, Sund.); *id. t. c.* p. 348.

✓ *Prister*, n. g. (no diagnosis). Type, *P. brasilianus* (Vieill.); *id. t. c.* p. 350.

Anas marmorata in Herzegovina; O. REISER, Verh. z.-b. Wien (1890), xl, p. 4; *id.*, Orn. Jahrb. i, pp. 108 & 109, taf. i. *A. circia* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii. *A. acuta* figured; *id. t. c.* *A. strepera* figured; *id. op. cit.* pt. xv. *A. castanea* and *A. gibberifrons* in Australia; G. A. KEARTLAND, Viet. Nat. vii, pp. 43-46.

Mareca penelope in Essex; W. RUSSELL, Zool. (3) xiv, pp. 62-69: figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xv.

Casarca rutila in confinement; HUET, Le Nat. xii, pp. 107 & 108.

Tadorna casarca, *Querquedula falcata*, hybrid, Wladivostok, E. Siberia; P. L. SCLATER, P. Z. S. 1890, p. 1: figured; *id. t. c.* pl. i.

Somateria dresseri, distribution and habits; G. W. MACKAY, Auk, vii, pp. 315-319.

Fuligula marila figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xv. *F. nyroca* figured; *id. op. cit.* pt. xiv. *F. ferina* figured; *id. op. cit.* pt. xiii. *F. cristata* figured; *id. t. c.*: in Borneo; A. H. EVERETT, Ibis, 1890, p. 263.

Bernicla brenta in Essex; W. RUSSELL, Zool. (3) xiv, pp. 62-69.

Order PELECANIFORMES.

Suborder PHAETHONTES.

Phaethon aethereus in Lower California; A. W. ANTHONY, Proc. Cal. Ac. Sci. (2) p. 86. *P. rubricauda*, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xix, fig. 1.

Suborder SULÆ.

Abeltera, nom. emend. pro "*Sula*, Reichenb."; F. HEINE, Nomencl. Mus. Hein. p. 351.

Sula bassana figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii.

Suborder PHALACROCORACES.

✓ *Enygrothrerres*, nom. emend. pro "*Stictocárbo*, Bp."; F. HEINE, Nomencl. Mus. Hein. p. 353.

↓ *Cyripeus*, nom. emend. pro "*Graculus*, Reichenb."; *id. t. c.* p. 352.

Phalacrocorax graculus croaticus, n. subsp., Croatia; S. BRUSINA, *Motr. Ptice. Soij.* [Birds of Croatia] p. 72.

Suborder PELECANI.

Pelecanus californicus, nesting habits; A. W. ANTHONY, *Proc. Cal. Ac. Sci.* (2) ii, pp. 83-85. *P. molinae*, notes on; A. B. MEYER, *J. f. O.* 1890, pp. 165-167. *P. onocrotalus*, figure of skeleton; *id.* *Abbild. Vogel-skel.* pts. xiv & xv, pl. cxxxi.

Suborder FREGATI.

Fregata aquila in California; T. S. PALMER, *Proc. Cal. Ac. Sci.* (2) ii, p. 88.

Order CATHARTIDIFORMES.

Mimogypes, a new name for the American Vultures; H. SEEBOHM, *Ibis*, 1890, p. 203. [= *Pseudogryphi*, Forbes.]

Sarcorhamphus gryphus, notes on anatomy; F. E. BEDDARD, *P. Z. S.* 1890, pp. 142-147. The syrinx figured (p. 146, fig. 3).

Order ACCIPITRIFORMES.

MATSCHIE, P. *Anleitung zum Bestimmen der deutschen Tagraubvogel.* *J. f. O.* 1890, pp. 89-93.

Gives diagnoses of the German birds of prey.

NORTH, A. G. *Descriptive Catalogue of Nests and Eggs of Birds found breeding in Australia and Tasmania.* 8vo, 1889.

The eggs of the following species figured, pls. i-v:—*Aquila audax*, *A. morphnoides*, *Haliaeetus leucogaster*, "*Astur*" *radiatus*, *Circus gouldi*, *C. assimilis*, *Baza subcristata*, *Accipiter cirrhocephalus*, *Hieracidea orientalis*, *Falco subniger*, *F. hypoleucus*, *F. melanogenys*, *Tinnunculus cenchroides*, *Elanus axillaris*, *Haliaastur sphenurus*, *Lophoictinia isura*, *Milvus affinis*, *Pandion leucocephalus*, *Gypoictinia melanosternum*.

RAMSAY, E. P. *Supplement to the Catalogue of the Australian Accipitres, or Diurnal Birds of Prey, in the Collection of the Australian Museum at Sydney, N.S.W.* Sydney: 1890, 8vo, pp. 3-9.

Family VULTURIDÆ.

Gyps fulvus, head figured; A. B. MEYER, *Abbild. Vogel-skel.* pts. xiv & xv, pl. cl. *G. melitensis*, n. sp. [fossil], from Malta; R. LYDEKKER, *P. Z. S.* 1890, pp. 404-408, pls. xxxv & xxxvi.

Family FALCONIDÆ.

Subfamily POLYBORINÆ.

✓ *Oronerites*, nom. emend. pro "*Phalcobænus*, Lafr."; F. HEINE, Nomencl. Mus. Hein. p. 272.

Subfamily ACCIPITRINÆ.

Circus philippinensis, n. sp., Mindanao, Guimaras, Luzon; J. B. STEERE, List Birds and Mamm. Philipp. p. 7 [= *C. melanoleucus* ♀]. *C. pygargus*, breeding in Suffolk; M. OGILVIE, Zool. (3) xiv, pp. 76 & 77. *C. æruginosus*, ad. et juv., figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xiv.

Astur palumbarius, skeleton figured; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxlviii.

Accipiter [*Astur*] *brevipes* in Bosnia; O. REISER, Verh. z. b. Wien, xl, p. 4, 1890; *id.*, Orn. Jahrb. i, pp. 105 & 106. *A. granti*, n. sp., Madeira; R. B. SHARPE, Ann. N. H. (6) v, p. 483. *A. büttikoferi* figured; J. BÜTTIKOFER, Reiseb. Liberia, ii, pl. xxx.

Subfamily BUTEONINÆ.

Alectromorphnus, nom. emend. pro "*Buteogallus*, Less."; F. HEINE, Nomencl. Mus. Hein. p. 271.

Buteo harlani, a race of *B. borealis*; R. RIDGWAY, Auk, vii, p. 205. *B. brachyurus* and *B. fuliginosus* undoubtedly identical; *id. op. cit.* 1890, p. 91. *B. brachyurus*, breeding in Florida; C. J. PENNOCK, *t. c.* pp. 56 & 57. *B. augur*, from the Kilimanjaro district; J. H. GURNEY, Ibis, 1890, p. 126. *B. lagopus* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xiv.

Subfamily AQUILINÆ.

Gypæetus barbatus in the Carpathians; E. VON CZYRK, Orn. Jahrb. i, pp. 45-55.

✓ *Uroætus brachialis*, DE VIS, P. R. Soc. Queensl. vi, p. 162, pl. x (1890).

✓ *Halinertus*, nom. emend. pro "*Haliastur*, Selby"; F. HEINE, Nomencl. Mus. Hein. p. 267.

Spilornis panayensis, n. sp., Guimaras, Panay, Negros; J. B. STEERE, List Birds and Mamm. Philipp. p. 7.

Haliaëtus albicilla figured; LORD LILFORD, Col. Fig. Br. Birds, pts. xiii & xvi.

✓ *Tolmolestes*, nom. emend. pro "*Spiziastur*, Less."; F. HEINE, Nomencl. Mus. Hein. p. 270.

✓ *Aquila chrysaetus*, in California; TAYLOR, H. R., Zoe, i, pp. 42-44.

✓ *Elasas*, nom. emend. pro "*Elanoides*, V."; F. HEINE, Nomencl. Mus. Hein. p. 264.

Machærhamphus anderssoni, from Cameroons; A. REICHENOW, J. f. O. 1890, p. 110. *M. alcinus*, on the Lawas River, N.W. Borneo; R. B. SHARPE, App. Jameson's Rear Column, p. 393.

Subfamily FALCONINÆ.

Baza leucopais figured ; J. WHITEHEAD, Ibis, 1890, pl. ii.

Pernis apivorus figured ; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avifaun. Ital. pt. xlvi.

Microhierax chinensis, David, probably identical with *M. melanoleucus* ; H. SEEBOHM, P. Z. S. 1890, p. 345.

† *Tolmerus*, nom. emend. pro "*Chicquera*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 260.

† *Gennadas*, nom. emend. pro "*Gennæa*, Kaup, nec *Gennæus*, Wagl." ; id. t. c. p. 262.

Falco peregrinus figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xii, 2 pls. ; K. TH. LIEBE, MB. Deutsch. Ver. Schutze, 1890, pp. 365-370, pl. vii. *F. æsalon* figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi.

Hypotriorchis eleonoræ figured ; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital. pt. xlvi.

† *Hiracospizias*, nom. emend. pro "*Hieraspiza*, Kaup." ; F. HEINE & A. REICHENOW, Nomencl. Mus. Hein. p. 253.

Cerchneis tinnunculus canariensis [Zool. Rec. xxvi, p. 65] figured ; A. KÆNIG, J. f. O. 1890, pl. i.

Falco tinnunculus figured ; LORD LILFORD, Col. Fig. Br. Birds, part xvi.

Order STRIGES.

MATSCHIE, P. Anleitung zum Bestimmen der deutschen Eulen. J. f. O. 1890, pp. 93 & 94.

Gives diagnoses of all the German species of Owls.

RAMSAY, E. P. Catalogue of the Australian Birds in the Australian Museum at Sydney, N.S.W. Part II. *Striges*. Sydney : 8vo, 1890, pp. 1-28.

STONE, W. Catalogue of the Owls in the Collection of the Academy of Natural Sciences of Philadelphia. P. Ac. Philad. 1890, pp. 124-131.

Bubo ignavus, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxlvii ; in Bosnia, O. REISER, MB. Deutsch. Ver. Schutze, 1890, pp. 10 & 11 ; in South Hungary ; G. LINDAUER, Orn. Jahrb. i, pp. 167-172. *B. milesi* = *Otus abyssinicus*, Guér. ; J. H. GURNEY, Ibis, 1890, p. 262. *B. lettii* figured ; J. BÜTTIKOFER, Reiseb. Liberia, ii, pl. xxxi.

† *Scototheres*, nom. emend. pro "*Lempijius*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 249.

Photodilus : its anatomy and osteology show that it is not allied to *Strix*, but belongs to the *Buboninae* ; skull, foot, and pelvis figured : F. E. BEDDARD, Ibis, 1890, pp. 293-304.

Nyctea (i.e., *Surnia*) *nisoria*, notes on ; E. HARTERT, J. f. O. 1890, pp. 100-102.

Surnia funerea figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii.

Nyctea nivea, posterior aspect of skull figured ; F. E. BEDDARD, *Ibis*, 1890, p. 297.

Speotyto rostrata, n. sp., Clarion I., Lower California ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 133.

Ninox boobook, egg figured ; A. J. NORTH, *Nests and Eggs Austr. B.* pl. vi, fig. 6.

Strix parvissima of Ellman, from New Zealand, if not a mythical species, was probably a small *Spiloglaux novæ-zealandiæ* ; W. W. SMITH, *Ibis*, 1890, pp. 24-26.

Ninox goodenoviensis, n. sp., Goodenough I. ; C. W. DE VIS, *Rep. Brit. New Guinea*, App. p. 107.

Glaucidium sigu (!), a Cuban species, in Teneriffe ; A. KÆNIG, J. f. O. pp. 336-340.

Otus vulgaris, its nest ; X. RASPAIL, *Bull. Soc. Z. Fr.* xv, pp. 130 & 131. *O. capensis*, from Madagascar, is a distinguishable race ; J. H. GURNEY, *Ibis*, 1890, p. 127.

Nyctimene [preoccupied in *Mammalia*], nom. emend. pro "*Macabra*, Bp." ; F. HEINE, *Nomencl. Mus. Hein.* p. 252.

Mesides, nom. emend. pro "*Meseidus*, Hodgs." ; *id. ibid.*

Tybo, nom. emend. pro "*Myrtha*, Bp." ; *id. ibid.*

Syrnium nebulosum in captivity ; F. ROLLES, *Auk*, vii, pp. 101-114. *S. uralense* figured ; E. H. GIGLIOLI & A. MANZELLA, *Iconogr. Avif. Ital.* pt. xlv.

S. niasense figured ; E. MODIGLIANI, *Viagg. a Nias*, taf. i, fig. 2.

Nyctala tengmalmi figured ; E. H. GIGLIOLI & A. MANZELLA, *Iconogr. Avif. Ital.* pt. xlv.

Strix flammea figured ; LORD LILFORD, *Col. Fig. Br. Birds*, pt. xiv. *S. candida*, egg figured ; A. J. NORTH, *Nests and Eggs Austr. B.* pl. vi, fig. 5.

Order CORACIIFORMES.

SEEBOHM, H. An Attempt to Diagnose the Subclass *Coraciiformes*, and the Orders, Suborders, and Families comprised therein. *Ibis*, 1890, pp. 200-205.

Suborder STEATORNITHES.

Steatornis caripensis, Range : full synonymy of the species ; P. L. SCLATER, *Ibis*, 1890, pp. 335-339.

Suborder PODARGI.

Podargus strigoides, egg figured ; A. J. NORTH, *Nests and Eggs Austr. B.* pl. vi, fig. 3. *P. cuvieri*, *id. t. c.* pl. vi, fig. 4.

Suborder CORACIÆ.

SHARPE, R. BOWDLER. Notes on Specimens in the Hume Collection of Birds. No. 6.—On the *Coraciidae* of the Indian Region, with descriptions of some New Species. P. Z. S. 1890, pp. 546-552.

Notes on the Racquet-tailed Rollers ; H. E. DRESSER, Ann. N. H. (6) vi, pp. 350 & 351.

Coracias weigsalli, n. sp., Newala, E. Africa ; *id. t. c.* p. 351. *C. mosambicus*, n. sp. [the species not being known from Mozambique], S. Africa ; H. E. DRESSER, Ibis, 1890, p. 386. *C. garrulus* figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xii.

Eurystomus letior, n. sp., S. India and Ceylon ; R. B. SHARPE, *t. c.* p. 551. *E. calonyx*, n. sp., ex. Hodgs. MSS., E. Siberia to Malaisia ; *id. ibid.* *E. solomonensis*, n. sp., Solomon Is. ; *id. t. c.* p. 552. *E. pacificus*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiv, fig. 1.

Suborder HALCYONES.

The suborder diagnosed, containing the following families :—*Todidae*, *Momotidae*, *Coliidae*, *Alcedinidae* ; H. SEEBOHM, Ibis, 1890, pp. 203 & 204.

Family ALCEDINIDÆ.

Ceyx platanæ, n. sp., Mindanao ; W. BLASIUS, J. f. O. 1890, p. 148. *C. margarethæ*, n. sp., Sulu Is. and Mindanao ; *id. t. c.* p. 141. *C. suluensis*, n. sp., Sulu Is. ; *id. ibid.* : also from Mindanao ; *id. t. c.* pp. 148 & 149. *C. mindanensis*, n. sp., Mindanao ; J. B. STEERE, List Birds and Mamm. Philipp, p. 10. *C. samarensis*, n. sp., Samar, Leyte ; *id. ibid.* *C. basilanicus*, n. sp., Basilan ; *id. ibid.* *C. fluminicola*, Samar and Leyte ; *id. ibid.* *C. bournsii*, n. sp., Basilan ; *id. ibid.* *C. malamani*, n. sp., "Basilan" ; *id. t. c.* p. 11.

Halcyon alfredi, n. sp., Bongao I., Tawi-tawi Archipelago ; E. OUSTALLET, Le Nat. xii, pp. 62 & 63.

Actinoides moseleyi, n. sp., Negros ; J. B. STEERE, List Birds and Mamm. Philipp, p. 11.

Dacelo gigas, egg figured ; A. J. NORTH, Nest and Eggs Austr. B. pl. vi, fig. 1. *D. leachii*, egg figured ; *id. t. c.* pl. vi, fig. 2.

Suborder BUCEROTES.

The suborder diagnosed ; H. SEEBOHM, Ibis, 1890, p. 204.

Buceros convexus, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxliii.

Anorrhinus comatus in Borneo ; R. B. SHARPE, Ibis, 1890, p. 16. *A. galeatus*, habits ; J. WHITEHEAD, *t. c.* p. 17.

Penelopides basilanica, n. sp., Basilan ; J. B. STEERE, List Birds and Mamm. Philipp, p. 13. *P. samarensis*, n. sp., Samar and Leyte ; *id. ibid.* *P. mindorensis*, n. sp., Mindoro ; *id. t. c.* p. 12.

Suborder UPUPÆ.

The diagnostic characters for the Order are the freedom of the hind plantar from the front plantar, and the junction of the feet of the

coracoids by an outer with an inner episternal process ; H. SEEBOHM, Ibis, 1890, p. 34.

Irrisor jacksoni, n. sp., Kikuyu, E. Africa ; B. B. SHARPE, Ann. N. H. (6) vi, p. 503.

Suborder MEROPEs.

Merops apiaster nesting in Hesse ; K. JUNGHaus, J. f. O. 1890, pp. 156 & 157.

Suborder CAPRIMULGI.

Egotheles novæ-hollandiæ, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiv, fig. 11. *Æ. loria*, n. sp., Rigo, S. E. New Guinea ; T. SALVADORI, Ann. Mus. Genov. (2) ix, p. 564.

Eurostopodus guttatus, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xi, fig. 2. *E. albigularis* ; *id. t. c.* pl. xi, fig. 3.

Phalaenoptilus nuttalli nitidus breeding in Kansas ; N. S. Goss, Auk, vii, p. 286.

Suborder CYPSELI.

ZEHNTNER, L. On the Development of the Feet of *Cypselus melba*. Ibis, 1890, pp. 196-200.

Cypselus melba, popular notes on ; F. DE SCHAECK, Le Nat. xii, p. 234. *C. affinis* in Liguria ; full synonymy given ; T. SALVADORI, Ann. Mus. Genov. (2) ix, p. 551.

Chatura gierræ, n. sp., Mombasa ; E. OUSTALET, Le Nat. xii, p. 274.

Acanthylis caudacuta figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi.

Suborder TROCHILI.

Trochilus colubris, mode of feeding young ; W. BREWSTER, Auk, vii, pp. 206 & 207.

Lampornis ellioti, n. sp., I. of Anegada, W. I. ; C. B. CORY, Auk, vii, p. 374.

Eriocnemis aurea, n. sp., Colombia ; A. B. MEYER, *t. c.* p. 315.

Lophornis insignibarbis, n. sp., Bogota ; E. SIMON, Bull. Soc. Z. Fr. xv, p. 17.

Chætocercus burmeisteri, note on ; H. BURMEISTER, Ibis, 1890, p. 384.

Order TROGONES.

The diagnostic characters of the Order *Heterodactyli* are defined ; H. SEEBOHM, Ibis, 1890, p. 37.

Harpactes whiteheadi, habits ; J. WHITEHEAD, *t. c.* p. 2. *H. orescius* in Borneo ; R. B. SHARPE, *t. c.* p. 3 : habits ; J. WHITEHEAD, *t. c.*

Order COCCYGES.

Cuculus canorus, habits ; A. WALTER, MB. Deutsch. Ver. Schutze, 1890, pp. 468-474.

Cacomantis flabelliformis, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiii, fig. 7.

Oxylophus glandarius figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi.

Lamprococcyx basalis, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiii, fig. 13. *L. plagosus*, egg figured ; *id. t. c.* pl. ix, fig. 13.

Hierococcyx nana, in Borneo ; R. B. SHARPE, Ibis, 1890, p. 11.

Scythrops novæ-hollandiæ, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. vii, fig. 3.

Eudynamis mindanensis var. *albomaculata*, Sulu Is. ; W. BLASIUS, J. f. O. 1890, p. 140.

Coccyzusa, nom. emend. pro "*Coccyua*, Less." ; F. HEINE & A. REICHENOW, Nomencl. Mus. Hein. p. 203.

Centrococcyx mindorensis, n. sp., Mindoro ; J. B. STEERE, List Birds and Mamm. Philipp. p. 12.

Order PSITTACIFORMES.

Cacatua leadbeateri, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiv, fig. 2. *C. roseicapilla* ; *id. t. c.* pl. xiv, fig. 3.

Licmetis nasica, egg figured ; *id. t. c.* pl. xiv, fig. 4.

Eclectus roratus, ♂ pull. figured ; A. B. MEYER, Ibis, 1890, p. 26, pl. i.

Ptilines erythropterus, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiv, fig. 5.

Platyercus pennantii, egg figured ; *id. t. c.* pl. xiv, fig. 6. *P. barnardi* ; *id. t. c.* pl. xiv, fig. 8.

Porphyrocephalus, nom. emend. pro "*Purpureicephalus*, Bp." ; F. HEINE, Nomencl. Mus. Hein. p. 241.

Culopsitta novæ-hollandiæ, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiv, fig. 9.

Trichoglossus novæ-hollandiæ, egg figured ; *id. t. c.* pl. xiv, fig. 8. *T. chlorolepidotus*, egg figured ; *id. t. c.* fig. 12 : old birds and young figured ; L. HECK, MB. Deutsch. Ver. Schutze, 1890, pp. 462-468, pl. ix.

Prioniturus discurus n. var. *suluensis*, Sulu Is. ; W. BLASIUS, J. f. O. 1890, p. 140. *P. luconensis*, n. sp., Luzon ; J. B. STEERE, List Birds and Mamm. Philipp. p. 6. *P. mindorensis*, n. sp., Mindoro ; *id. t. c.* p. 6.

Cyclopsitta [cus] mindanensis, n. sp., Mindanao ; *id. t. c.* p. 6.

Loriculus signijorensis, n. sp., Signijor ; *id. t. c.* p. 6. *L. mindorensis*, n. sp., Mindoro ; *id. t. c.* p. 6. *L. worcesteri*, n. sp., Samar, Leyte ; *id. t. c.* p. 6.

Psittacus erithacus, popular notes on ; R. SAINT-LOUP, Le Nat. xii, pp. 197 & 198.

Geoffroyius sudestiensis, n. sp., Sud-est I., Louisiade Archipelago ; C. W. DE VIS, Rep. Brit. N. Guin., App., p. 107.

✓ *Pionites*, nom. emend. pro "*Caica*, Less."; F. HEINE, Nomencl. Mus. Hein. p. 231.

Chrysotis cæligena, Schl., = *C. dufresniana* (Shaw); SALVADORI, Ibis, 1890, pp. 367-370. *C. rhodocorytha*, n. sp. (= *C. dufresniana*, auct., nec Shaw), from Brazil; *id. t. c.* p. 370.

Androglossa ochrocephala, skeleton figured; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxli.

Order SCANSORES.

Suborder RHAMPHASTIDES.

✓ *Dinorhamphus*, nom. emend. pro "*Tucanus*, Cass."; F. HEINE, Nomencl. Mus. Hein. p. 228.

✓ *Machlostomus*, nom. emend. pro "*Tucaius*, Bp."; *id. t. c.* p. 228.

✓ *Ulocornis*, nom. emend. pro "*Beauharnasius*, Bp."; *id. t. c.* p. 229.

✓ *Rhagoborus*, nom. emend. pro "*Baillonius*, Cass."; *id. ibid.*

Rhamphastos dicolorus, skeleton figured; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxlii.

Pteroglossus didymus, n. sp., Upper Amazonia; P. L. SCLATER, P. Z. S. 1890, p. 203.

Suborder CAPITONES.

✓ *Geniatus*, nom. emend. pro "*Chotorea*, Bp."; F. HEINE, Nomencl. Mus. Hein. p. 225.

✓ *Abelterus*, nom. emend. pro "*Eubucco*, Bp."; *id. t. c.* p. 227.

✓ *Pogonites*, nom. emend. pro "*Buccanodon*, Verr."; *id. t. c.* p. 226.

Order PICIFORMES.

Suborder PICI.

HARGITT, E. Catalogue of the *Picariæ* in the Collection of the British Museum. [Vol. xviii of The Catalogue of Birds.] *Scansores*, containing the Family *Picidæ*. 1890: 8vo, pp. i-xvi, 1-598, pls. i-xv.

Three subfamilies recognised: i. *Picinae* (342 species); ii. *Picumninae* (39 species); iii. *Iynginae* (4 species). [Cf. ALLEN, Auk, 1891, pp. 92-95.]

Family PICIDÆ.

Subfamily PICINÆ.

Colaptes auratus, [supposed] change of habit causing change of structure; B. SHARP, P. Ac. Philad. 1890, pp. 347 & 348.

Gecinus viridis figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi. *G. canus*, skeleton figured; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxl.

Chloronerpes xanthochlorus figured; E. HARGITT, *ut supra*, pl. i. *C. godmani*, n. sp., Mexico; *id. t. c.* p. 83.

Iyngipicus nigrescens figured ; *id. t. c.* pl. v. *I. picatus* figured ; *id. t. c.* pl. vi, fig. 1. *I. grandis* figured ; *id. t. c.* pl. vi, fig. 2.

Iyngipicus basilanicus, n. sp., Basilan ; J. B. STEERE, List Birds and Mamm. Philipp. p. 9. *I. leytenensis*, n. sp., Leyte ; *id. t. c.* p. 9.

Chrysophlegma wrayi figured ; E. HARGITT, *t. c.* pl. ii.

Melanerpes pulcher figured ; *id. t. c.* pl. iii. *M. formicivorus aculeatus*, n. subsp. ; E. A. MEARNs, Auk, vii, pp. 249-251.

Dendrocopus pyrrhoxanthus figured ; E. HARGITT, *t. c.* pl. iv. *D. major*, in Ireland ; R. L. PATTERSON, Ibis, 1890, p. 130. *D. major canariensis* [Zool. Rec. xxvi, *Aves*, p. 58], figured ; A. KÖNIG, J. f. O. 1890, taf. ii.

Dendrobates fidelis [Zool. Rec. xxvi, *Aves*, p. 57], figured ; E. HARGITT, *t. c.* pl. vii.

Mesopicus johnstoni (pl. ix), *M. xantholophus* (pl. vii) figured ; *id. t. c.*

✓ *Sapheopipo*, n. g. Type, *S. noguchii* ; *id. t. c.* p. 378.

Miglyptes infuscatus figured ; E. MODIGLIANI, Viagg. a Nias, taf. i, fig. 1.

Celeus spectabilis figured ; E. HARGITT, *ut supra*, pl. x.

Cerchrneipicus occidentalis figured ; *id. t. c.* pl. xi.

✓ *Crocomorphus*, n. g. Type, *C. flavus* (Müll.) ; *id. t. c.* p. 439.

Chrysocolaptes samarensis, n. sp., Samar, Leyte ; J. B. STEERE, List Birds and Mamm. Philipp. p. 8.

✓ *Microstictus*, nom. emend. pro "*Lichtensteinipicus*, Reich." ; E. HARGITT, *t. c.* p. 489.

Thriponax javensis, n. var. *suluensis*, Sulu Is. ; W. BLASIUS, J. f. O. 1890, p. 140. *T. philippensis*, n. sp., Guimaras, Masbate ; J. B. STEERE, List Birds and Mamm. Philipp. p. 8. *T. mindorensis*, n. sp., Mindoro ; *id. t. c.* p. 8.

Picumnus flavifrons figured ; E. HARGITT, *t. c.* pl. xiv, figs. 1 & 2. *P. wallacii* figured ; *id. t. c.* pl. xiv, fig. 3.

✓ *Nesocittes*, n. g. Type, *N. micromegastus* ; *id. t. c.* p. 552.

Sasia everetti, n. sp., N.W. Borneo ; *id. t. c.* p. 559, pl. xv.

Subfamily IYNGINÆ.

The Wrynecks placed as a subfamily of the *Indicatoridæ* ; F. HEINE & A. REICHENOW, Nomencl. Mus. Hein. p. 196.

Order EURYLÆMI.

The diagnostic characters for the order are the *Ægithognathous* palate, the Galline plantars, and the nude oil-gland ; H. SEEBOHM, Ibis, 1890, p. 34.

Sarcophanops samarensis, n. sp., Samar ; J. B. STEERE, List Birds and Mamm. Philipp. p. 23.

Serilophus erythropygus, nom. emend. pro "*S. rubropygius*, Hodgs." ; F. HEINE & A. REICHENOW, Nomencl. Mus. Hein. p. 158.

Order MENURÆ.

Menura. The species described ; R. B. SHARPE, Cat. Birds Brit. Mus. xiii, pp. 661-663.

Menura victoria, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. x, figs. 1 & 2. *M. alberti*, *M. superba* ; *id. t. c.* pl. x, figs. 3 & 4.

Order PASSERIFORMES.

PASSERES.

The diagnostic characters for the order are the Ægithognathous palato and the freedom of the hind plantar from the front plantars ; H. SEEBOHM, Ibis, 1890, p. 33.

Section A. OSCINES.

Fam. CORVIDÆ.

SHUFELDT, R. W. The Myology of the Raven (*Corvus corax sinuatus*). 1890, 8vo, pp. i-xix & 1-343.

The Raven has been selected as an example for demonstrating the muscular anatomy of Birds. The book is profusely illustrated.

Corvus tingitanus, eggs figured ; A. KÖNIG, J. f. O. 1890, taf. viii, fig. 10. *C. coronoides*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. vii, fig. 8.

Corone australis, egg figured ; *id. t. c.* pl. vii, fig. 7.

Corvus samarensis, n. sp., Samar ; J. B. STEERE, List Birds and Mamm. Philipp. p. 23.

Nucifraga caryocatactes, migration ; J. CORDEAUX, Zool. 1890, pp. 432 & 433 : breeding in the Hartz Mountains ; L. W. WIGLESWORTH, *t. c.* p. 388.

Picicorvus columbianus, breeding in Colorado ; C. E. BENDIRE, Auk, 1890, p. 92.

Strepera cuneicaudata, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. vii, fig. 1. *S. fuliginosa* ; *id. t. c.* pl. vii, fig. 2.

Pica caudata figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xii.

Garrulus glandarius, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxlvi.

Cyanocitta stelleri littoralis, not distinct from *C. stelleri* ; F. M. CHAPMAN, Auk, 1890, p. 91.

Aphelocoma [californica] hypoleuca, nest and eggs ; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, p. 24. *A. californica obscura*, n. subsp., San Pedro Mts., Lower California ; A. W. ANTHONY, *t. c.* pp. 75 & 76.

Fregilus graculus, habits ; A. H. MALAN, J. R. Inst. Cornwall, x, pp. 97-108.

Podoces panderi, nests and habits ; N. ZARUDNOI, Bull. Soc. Imp. Mosc. 1889, No. 3, pp. 455-465 : two nests figured ; *id. t. c.* taf. v.

Family PARADISEIDÆ.

GOODWIN, A. P. Notes on the Paradise-birds of British New Guinea. *Ibis*, 1890, pp. 150-156.

Notes on the *Paradiseidæ* met with during Sir William McGregor's expedition to the Owen Stanley Range in S.E. New Guinea.

Xanthomelus macgregorii, n. sp.; A. P. GOODWIN, *t. c.* p. 153. [= *Cnemophilus macgregorii*, *vide infra*.]

Family PTILONORHYNCHIDÆ.

Ptilonorhynchus violaceus, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xi, fig. 6.

Chlamydodera cerviniventris, egg figured; *id. t. c.* fig. 4. *C. maculata*; *id. t. c.* fig. 5.

Cnemophilus, n. g. Type, *C. macgregorii*, n. sp., Owen Stanley Mts. S.E. New Guinea; C. W. DE VIS, Rep. Brit. New Guinea, App. pp. 115 & 116.

Amblyornis macgregoriae, n. sp., Owen Stanley Mts. S.E. New Guinea, *id. t. c.* App. pp. 113 & 115. *A. musgravianus*, n. sp., its nest figured; A. P. GOODWIN, *t. c.* pp. 153 & 154. *A. subalaris*, its nest figured; *id. t. c.* p. 155.

Family STURNIDÆ.

SHARPE, R. B. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. *Sturnidæ*. 8vo, 1890, pp. 22-197, pls. i-viii.

Two subfamilies recognized: *Sturninæ*, with 39 genera and 147 species; and *Buphaginæ*, with 1 genus and 2 species

Sturnus vulgaris, in Ayrshire; D. LANDSBOROUGH, P. N. H. Soc. Glasg. new ser. ii, pp. 208-211: an intermediate form in Western Europe. R. B. SHARPE, Cat. B. Brit. Mus. xiii, p. 29. *S. menzbieri* figured; *id. t. c.* pl. i. *S. porphyronotus* figured; *id. t. c.* pl. ii.

Spodiopsar cambodianus [Zool. Rec. xxvi, p. 50] figured; *id. t. c.* pl. iii. *S. burmanicus* (fig. 1) and *S. leucocephalus* (fig. 2) figured; *id. t. c.* pl. iv.

Poliopsar [*Spodiopsar*] *fuscogularis*, n. sp., Karen Hills, British Burmah; T. SALVADORI, Ann. Mus. Genov. (2) vii, p. 364, *Ibis*, 1890, p. 130.

Sturnopastor jalla (fig. 3), *S. contra* (fig. 1), and *S. superciliaris*, heads figured; R. B. SHARPE, *t. c.* pl. v.

↓*Laceryzon*, nom. emend. pro "*Gracupica*, Less."; F. HEINE, Nomencl. Mus. Hein. p. 109.

Æthiopsar, n. g. Type, *Æ. fuscus*; R. B. SHARPE, *t. c.* pp. 79 & 666.

Pastor roseus, skeleton figured; A. B. MEYER, Abbild. Vogel.-skel.

pts. xiv & xv, pl. cxliv : in Bulgaria in 1890, a red-headed variety ; *id.* P. Z. S. 1890, p. 590 ; F. DE SCHAECK, Le Nat. xii, p. 205 : migration in Europe in 1890 ; TSCHUSI ZU SCHMIDHOFEN, Orn. Jahrb. i, pp. 65-70.

Family EULABETIDÆ.

Mainatus, Less., 1827, is the older generic name for the Wattled Mynas (*Gracula*, auct.) ; R. B. SHARPE, Cat. B. Brit. Mus. xiii, p. 98. [This is a mistake, as *Eulabes*, Cuv., 1815, is older. Cf. OATES, Faun. Brit. Ind., Birds, i, p. 509.]

Mainatus [potius *Eulabes*] *palawanensis*, n. sp., Palawan ; R. B. SHARPE, Cat. B. Brit. Mus. xiii, p. 114.

Eulabes intermedia, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxlv.

Gracula robusta figured ; E. MODIGLIANI, Viagg. a Nias, taf. ii, fig. 2.

✓ *Eumathes*, nom. emend. pro "*Mino*, Less." ; F. HEINE, Nomencl. Mus. Hein. p. 110.

Spreo fischeri (Reichen.) is a *Pholidauges* ; R. B. SHARPE, *t. c.* pp. 667 & 668.

S. shelleyi, n. sp., Somali Land ; *id. t. c.* p. 190.

Aplonis byunnesiensis, n. sp., Savage Island ; *id.* Cat. B. Brit. Mus. xiii, p. 132, pl. vi. *A. inornata*, n. sp., patriâ ignotâ ; *id. t. c.* p. 135. [? = *Aplonis ulietensis*, ex *Turdus ulietensis*, Gm. (ex Forster) ; cf. SHARPE, *l. c.*]

Calornis corymbina (Kittl.) probably not a *Calornis* at all ; *id. t. c.* p. 137. *C. crassa*, Sclater, from Timor Laut, is an *Aplonis* ; *id. t. c.* p. 134. *C. kittlitzii* is an *Aplonis* ; *id. t. c.* p. 136. *C. altirostris* figured ; E. MODIGLIANI, Viagg. a Nias, taf. ii, fig. 1. *C. irwini* (Hume) and *C. affinis* (A. Hay) not separable from *C. chalybea* (Horsf.), remarks on these races ; R. B. SHARPE, Cat. B. Brit. Mus. xiii, p. 143. *C. sulaensis*, n. sp., Sula Islands ; *id. t. c.* p. 149. *C. crassirostris*, Walden, = *C. obscura*, Bp. ; *id. t. c.* p. 149.

Lamprotorornis eytoni is probably distinct from *L. caudatus* ; *id. t. c.* p. 155.

✓ *Chalcopsar*, nom. emend. pro "*Megalopterus*, A. SMITH," nec BOIE ; *id. t. c.* p. 158.

✓ *Hagiopsar*, n. g. Type, *H. tristrami*, Scl. ; *id. t. c.* p. 168.

✓ *Heteropsar*, n. g. Type, *H. acuticaudus* ; *id. t. c.* p. 185.

Lamprocolius splendidus (fig. 4), *L. glaucovirens* (fig. 2), *L. lessoni* (fig. 3), *L. ignitus* (fig. 1), heads figured ; *id. t. c.* pl. vii. *L. purpureus* (fig. 1), *L. sycobius* (fig. 3), *L. chloropterus* (fig. 2), *L. chalcurus* (fig. 4), *L. purpureiceps* (fig. 5), *L. cupreocaudus* (fig. 6), heads figured ; *id. t. c.* pl. viii. *L. porphyryrus*, Hartl., = *L. chalcurus* ; *id. t. c.* p. 179.

Family DICRURIDÆ.

Dicruropsis guillemardi, Obi Is. ; T. SALVADORI, Mem. R. Acad. (2) xi, p. 220.

Buchanga palawanensis, n. sp., Palawan; J. WHITEHEAD, Ibis, 1890, p. 47.

Dicrurus leucogenys, var. *salangensis*; A. REICHENOW, Nomencl. Mus. Hein. p. 69, Salanga Is. *D. leucopæus* [nom. nudum = *D. leucogenys*, Wald.]; *id. t. c.* p. 69.

Family ORIOLIDÆ.

Oriolus samarensis, n. sp., Samar; J. B. STEERE, List Birds and Mamm. Philipp. p. 17.

Mimeta affinis, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xi, fig. 12.

Sphecotheres maxillaris, egg figured; *id. t. c.* fig. 11.

Family ICTERIDÆ.

Icterus bullocki in New England; W. BREWSTER, Auk, 1890, p. 92. *I. baltimore* in Shetland; J. E. HARTING, Zool. 1890, p. 457. *I. northropi*, n. sp., Andros I., Bahamas; J. A. ALLEN, Auk, vii, pp. 343-346.

Scolecophagus carolinus in Lower California; A. W. ANTHONY, Proc. Cal. Acad. Sci. (2) ii, p. 86.

Dolichonyx oryzivorus, its changes of plumage; F. M. CHAPMAN, Auk, vii, pp. 120-124: winter distribution and migration; *id. op. cit.* pp. 39-45.

Family PLOCEIDÆ.

SHARPE, R. B. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. [Vol. xiii of The Catalogue of Birds.] *Ploceidæ*. 8vo, 1890, pp. 198-511, pls. ix-xv.

The *Viduinæ* are the first Subfamily, with 43 genera and 218 species. The *Ploceinæ* have 20 genera and 98 species.

Subfamily VIDUINÆ.

✓ *Penthetriopsis*, n. g. Type, *P. macrura*; R. B. SHARPE, Cat. B. Brit. Mus. xiii, p. 220.

Urobrachya hildebrandti, n. sp., Mombasa; *id. t. c.* p. 225. *U. zanzibarica*, Shelley, = *U. phænicea*, Heugl.; *id. t. c.* p. 225. *U. bocagii* figured; *id. t. c.* pl. ix.

Pyromelana phænicomera [potius *xanthomera*] is scarcely separable from *P. capensis*; *id. t. c.* p. 239.

Quelea erythrops (fig. 1), *Q. quelea* (fig. 2), *Q. intermedia* (fig. 4), *Q. æthiopica* (fig. 5), *Q. russi* (fig. 6), heads figured; *id. t. c.* pl. x.

Spermestes rufodorsalis, Peters, = *S. dorsalis*, Cass.; *id. t. c.* p. 263. *S. scutata*, Heugl., distinct from *S. cucullata*, Sw.; *id. t. c.* p. 265.

Amauresthes fringilloides, from Natal; *id. t. c.* p. 268.

Pytelia monteiri (Hartl.), *Hypargus niveiguttatus* (Peters), and *H. mar-*

garitatus (Strickl.) referred to genus *Lagonosticta*; *id. t. c.* pp. 273-275. *L. brunneiceps*, n. sp., E. Africa; *id. t. c.* p. 277. *L. polionata* (fig. 2), *L. congica*, n. sp. (fig. 3), Upper Congo, *L. jamesoni* (fig. 1) figured; *id. t. c.* pl. xi. *L. landanæ*, n. sp., figured; *id. t. c.* pl. xii, fig. 1.

†*Stictospiza*, n. g. Type, *S. formosa*, Lath.; *id. t. c.* p. 287.

Amadina marginalis, n. sp., W. Africa; *id. t. c.* p. 290.

Zonogastris soudanensis, n. sp., N.E. Africa; *id. t. c.* p. 298.

Pytelia hypogrammica figured; *id. t. c.* pl. xii, fig. 2.

Coccopygia kilimensis, n. sp., Mt. Kilimanjaro; *id. t. c.* p. 307.

Hypochera amauropteryx, n. sp., S.E. Africa; *id. t. c.* p. 309.

Nigrita pinaronota, nom. emend. pro *fusconota*, Fraser, and *dorsofusca*, Heine; *id. t. c.* p. 318.

Estrela melpoda (V.) is a *Sporaginus*; *id. t. c.* p. 325.

Donacicola and *Padda* = *Munia*; *id. t. c.* p. 326.

Munia wallacii, n. sp., Lombock; *id. t. c.* p. 339. *M. punctulata* and *M. subundulata*, dorsal feathers figured; *id. t. c.* pp. 348 & 350. *M. cabanisi*, nom. emend. pro "*Uroloncha jagori*, Cab." (nec *Munia jagori*, Cab.); *id. t. c.* p. 353.

Pytelia caniceps, Reichenb., is an *Uroloncha*; *id. t. c.* p. 356.

Uroloncha squamicollis, n. sp., China; *id. t. c.* p. 359.

Munia semistriata, Hume, *M. fumigata*, Walden, *M. fuscans*, Cass., *M. tristissima*, Wall., *M. leucosticta*, D'Albert and Salvad., *M. pectoralis*, Jerd., and *M. kelaarti*, Jerd., referred to the genus *Uroloncha*; *id. t. c.* pp. 361-368.

Uroloncha propinqua, n. sp., Celebes, Flores; *id. t. c.* p. 368. *U. cantans*, Gm., is an *Aidemosyne*; *id. t. c.* p. 371.

Erythrura forbesi, n. sp., Timor Laut; *id. t. c.* p. 387.

Estrela angolensis (L.) distinct from *E. phænicotis*, Swains.; *id. t. c.* p. 402.

Habropyga tenerrima, Hartl., not identical with *H. nonnula* (Reichenb.), as stated by Capt. Shelley (P. Z. S. 1888, p. 31); G. HARTLAUB, Ibis, 1890, p. 263; A. REICHENOW, J. f. O. 1890, p. 75.

†*Granatina*, n. g. (ex Bp.); R. B. SHARPE, *t. c.* p. 403. Type, *G. granatina*.

Subfamily PLOCEINÆ.

Sharpia, Bocage, = *Anaplectes*, Reichenb.; *id. t. c.* p. 411.

• *Heterhyphantes*, n. g. Type, *H. melanogaster*, Shelley; *id. t. c.* p. 414.

Sitagra monacha, nom. emend. pro "*S. personata* (auct. nec V.)"; *id. t. c.* p. 426.

Hyphantornis castanops (fig. 1), *H. xanthopterus* (fig. 2), *H. aurantius* (fig. 3), *H. aureiflavus* (fig. 4), *H. bojeri* (fig. 6): heads figured; *id. t. c.* pl. xiii. *H. jamesoni*, n. sp., Mashona Land; *id. t. c.* p. 447. *H. castaneiceps*, n. sp., Taveta, E. Africa; *id. t. c.* p. 448: head figured, pl. xiii, fig. 5. *H. shelleyi*, n. sp. [= *H. vitellinus*, Sharpe, nec Licht., ex Africa merid.]; *id. t. c.* p. 464. *H. superciliosus*, ♂ ♀ figured; *id. t. c.* pl. xiv. *H. cucul-*

lata, skeleton figured ; A. B. MEYER, Abbild. Vogel-skel. pts. xiv & xv, pl. cxliv, fig. 1.

Ploceus reichardi, distinct from *P. vitellinus* ; A. REICHENOW, J. f. O. 1890, p. 75.

Malimbus bartletti, n. sp., Gold Coast ; R. B. SHARPE, *t. c.* p. 479.

✓ *Nesacanthia*, n. g. Type, *N. eminentissima* (Bp.) ; *id. t. c.* p. 483.

Ploceus baya, Blyth, is correct name for *P. philippinus*, auct. ex India ; *id. t. c.* p. 488. *H. atrigula*, Hodgs., correct name for *P. baya*, auct. nec Blyth ; *id. t. c.* p. 491.

Spermospiza rubricapilla figured ; *id. t. c.* pl. xv.

Family TANAGRIDÆ.

Calliste tricolor figured ; P. MANGELSDORFF, MB. Deutsch. Ver. Schutze, 1890, pp. 374-386, pl. viii.

Family CÆREBIDÆ.

The southern range of the Family ; P. L. SCLATER, *Ibis*, 1890, p. 131.

Family DREPANIDÆ.

Hemignathus hanapepe and *H. stejnegeri* figured ; S. B. WILSON, *Ibis*, 1890, pl. vi, figs. 1 & 2.

Acrulocercus nobilis and *A. braccatus* figured ; S. B. WILSON & A. H. EVANS, *Av. Haw.* pt. i.

Vestiaria coccinia, various phases of plumage figured ; *id. t. c.*

Loxops flummea figured ; *id. t. c.*

Oreomyza wilsoni, n. sp., Kauai, Sandwich Is. ; L. STEJNEGER, *P. U. S. Nat. Mus.* xii, p. 386.

Chrysomitridops caruleirostris figured ; S. B. WILSON & A. H. EVANS, *Av. Haw.* pt. i.

Family FRINGILLIDÆ.

POLING, O. C. Notes on the *Fringillide* of Western Illinois. *Auk*, vii, pp. 238-243.

Subfamily COCCOTHTRAUSTINÆ.

Coccothraustes vulgaris figured ; LORD LILFORD, *Col. Fig. Br. Birds*, pt. xvi. *C. vespertina*, occurrences in various States of North America ; *Auk*, vii, pp. 209-211 : in Quebec ; F. B. CAULFIELD, *Can. Rec.* iv, pp. 109-111 : in captivity ; R. W. SHUFELDT, *Auk*, 1890, pp. 93-95. *C. vespertina montana*, in Arizona ; E. A. MEARN, *Auk*, vii, pp. 246-249.

Fringilla killitzi, n. sp., Bonin Is. ; H. SEEBOHM, *Ibis*, 1890, p. 101.

Guiraca rothschildii, n. sp., British Guiana ; E. BARTLETT, *Ann. N. H.* (6) vi, pp. 168 & 169.

Subfamily FRINGILLINÆ.

Fringilla palmæ figured; H. B. TRISTRAM, Ibis, 1890, pl. iii. *F. cærulescens* [Zool. Rec. xxvi, p. 43], figured; A. KÆNIG, J. f. O. 1890, taf. vii. The priority of the author's name over that of *F. palmæ*, Tristram, demanded; *id. t. c.* p. 479. *F. tintillon maderensis*, n. subsp., Madeira; *id. t. c.* pp. 270-277 (♂ figured) taf. vi, fig. 1 [Is *F. maderensis*, Sharpe, Cat. B. Brit. Mus. xii, p. 175, 1888]: egg figured; *id. t. c.* taf. viii, fig. 2. *F. canariensis*, ♂ ♀ figured; *id. t. c.* taf. vi, figs. 1 & 2: egg figured; *id. t. c.* taf. viii, fig. 3. *E. teydea*, egg figured; *id. t. c.* taf. viii, fig. 1.

Carduelis elegans figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xv.

Fringilla spinus figured; *id. op. cit.* pt. xiv. *F. chloris* figured; *id. ibid.*

Chrysomitris spinus × *Acanthis linaria*; TH. LORENZ, J. f. O. 1890, pp. 98-100.

Spinus tristis pallidus, n. subsp., Arizona; E. A. MEARNs, Auk, vii, pp. 244-246.

Fringilla linaria figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xv: cause of variation in length of bill; H. P. PYCRAFT, Tr. Leicester Soc. i, pt. vii, pp. 342 & 343.

Fringilla rufescens and *F. flavirostris* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xiii.

Leucosticte brandti, Bp., is a *Fringillauda*; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 248.

Passer montanus in the North of England; H. A. MACPHERSON, Nat. 1890, pp. 92-94; F. B. WHITLOCK, *t. c.* pp. 155, 156, 319, & 320; J. W. FAWCETT, *t. c.* pp. 277, 278, 353, & 354; J. YOUNG, *t. c.* p. 354.

✓*Pseudostruthus*, n. g. Type, *P. gongonensis*, n. sp., Gongoni, E. Africa; E. OUSTALET, Le Nat. xii, p. 274.

Fringilla serinus figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi.

Serinus pectoralis, Murray, from Sind, = *Crithagra ictera* (V.); E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 233, note.

✓*Telespyza*, n. g. Type, *T. cantans*, n. sp., Midway I., N. Pacific; S. B. WILSON, Ibis, 1890, p. 341, pl. ix.

Carpodacus mexicanus frontalis, development of young; C. A. KEELER, Zœe, i, pp. 172-176, pl. vi. *C. frontalis ruberrimus*, nest and eggs; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, pp. 22 & 23.

Pyrrhospiza humii, probably = *P. punicea*; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 211.

Loxia curvirostra, nesting in Ireland; R. J. USSHER, Zool. 1890, pp. 199-204. *L. bifasciata*, in Sussex; H. BENSON, *t. c.* p. 17: in Europe in 1890, TSCHUSI ZU SCHMIDHOFEN, Orn. Jahrb. i, pp. 70-81: notes on; E. VON CZÝNK, *t. c.* pp. 172-177: on the beak of the Crossbills; H. GADOW, Zool. Jahrb. v, pp. 630-633, taf. xliii.

Pyrrhula erythrina figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xiv.

Pinicola enucleator in England; J. H. GURNEY, Zool. 1890, pp. 125-129; J. WHITAKER, *t. c.* p. 464.

Loxioides bailleui figured; S. B. WILSON & A. H. EVANS, Av. Haw. pt. 1.

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Subfamily EMBERIZINÆ.

Fringillaria major, distinct from *F. orientalis* ; A. REICHENOW, J. f. O. 1890, pp. 76 & 77.

Zonotrichia intermedia and *Z. gambeli* intergrade ; R. RIDGWAY, Auk, 1890, p. 96.

Amphispiza belli cinerea, n. subsp., Lower California ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 136.

Junco hyemalis thurberi, n. subsp., Los Angeles, California ; A. W. ANTHONY, Zoe, i, pp. 238 & 239. *J. ridgwayi*, n. sp., Arizona ; E. A. MEARNS, Auk, vii, pp. 243 & 244. *J. townsendi*, n. sp., Lower California ; W. A. ANTHONY, Proc. Cal. Ac. Sci. (2) ii, pp. 76 & 77 : nest and eggs ; *id.* Zoe, 1890, pp. 5 & 6.

Melospiza fasciata rivularis, nest and eggs ; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, pp. 22 & 23. *M. fasciata graminea*, n. subsp., Sta Barbara I. ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 139. *M. fasciata clementæ*, San Clemente I. ; *id. t. c.* p. 139.

Passerella iliaca, in California ; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, p. 90.

Pipilo maculatus, variations in the white in the tail-feathers ; W. STONE, P. Ac. Philad. 1890, pp. 215 & 216, with figs. *P. fuscus mesoleucus* and *P. aberti*, nest and eggs ; C. E. BENDIRE, Auk, 1890, pp. 22-29.

Spiza americana, note on its disappearance from the District of Columbia ; HUGH M. SMITH, P. U. S. Nat. Mus. xiii, pp. 171 & 172.

Family ALAUDIDÆ.

SHARPE, R. B. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. [Vol. xiii of The Catalogue of Birds.] Family *Alaudidæ*. 8vo, 1890. Vol. xiii, pp. 512-671.

Otocorys : the range of the different species of North America ; the various races described ; J. DWIGHT, Auk, vii, pp. 138-158, with a map. *O. alpestris adusta*, n. subsp., Arizona and Chihuahua ; *id. t. c.* pp. 148 & 149. *O. alp. merrilli*, n. subsp., Oregon ; *id. t. c.* pp. 153 & 154. *O. alp. pallida*, n. subsp., Lower California and Sonora ; *id. t. c.* pp. 154 & 155. *Otocorys*, key to the species ; *id. t. c.* pp. 156 & 157. *O. bicornis*, n. sp. (ex Hempr.), Palestine ; R. B. SHARPE, *t. c.* p. 532. *O. pallida*, n. sp. (nec Dwight), Central Asia ; *id. t. c.* p. 533 [corrected to *O. diluta* ; *id. t. c.* p. 671]. *O. alpestris pallida*, n. subsp., Rio Colorado, Sonora ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 138. *O. alp. insularis*, n. subsp., San Clemente I. ; *id. t. c.* p. 140. *O. alpestris* figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi. *O. penicillata*, in Bosnia ; O. REISER, Verh. z.-b. Wien, xl, p. 3 ; *id.* Orn. Jahrb. i, pp. 106-108. *O. berlepschi*, n. sp., hab. unknown ; E. HARTERT, J. f. O. 1890, p. 103.

Alamon desertorum (Stanl.), distinct from *A. alaudipes* (Desf.) ; R. B. SHARPE, Cat. B. Brit. Mus. xiii, pp. 518 & 519.

✓ *Chersophilus*, n. g. Type, *C. duponti* ; *id. t. c.* p. 525.

Melanocorypha leucoptera figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi.

Alda arvensis and allies ; R. B. SHARPE, *t. c.* pp. 566-575. *A. arvensis* figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi. *A. brachydactyla*, at Great Yarmouth ; G. SMITH, Zool. (3) xiv, p. 77.

Aldula is a distinct genus from *Calandrella*, and should contain the following species : *A. pispoletta*, *A. bætica*, *A. minor*, *A. cheelensis*, *A. raytal*, *A. adamsi*, and *A. leucophæa* ; R. B. SHARPE, *t. c.* pp. 586-593. *A. persica*, n. sp., Persia ; *id. t. c.* p. 590. *A. seebohmi*, n. sp., Central Asia ; *id. ibid.*

Mirafra secunda, n. sp., S. Australia ; *id. t. c.* p. 603. *M. alopex*, n. sp., Somali Land ; *id. t. c.* p. 617.

Helicocorys, n. g. Type, *H. modesta* (Hengl.) ; *id. t. c.* p. 623.

Megalophonus fischeri, distinct from *Alda apiata*, V. ; A. REICHENOW, J. f. O. 1890, pp. 75 & 76.

Galerita cristata : the different races ; *id. t. c.* pp. 625-633. *G. thecklæ*, from Spain, distinct from *G. cristata* ; *id. t. c.* p. 633.

Galerida rüppelli, n. sp., Abyssinia ; E. HARTERT, J. f. O. 1890, p. 102.

Ammomanes algeriensis, n. sp., Algeria ; R. B. SHARPE, *t. c.* p. 645.

Family MOTACILLIDÆ.

Motacilla melanope and *M. alba*, in Oxfordshire ; O. V. APLIN, Zool. 1890, pp. 371-376.

Budytes beema, in Italy ; V. DE ROMITA, Agg. Orn. Pugl. p. 9. *B. nigricapillus*, heads figured to show variation in yellow eyebrow, tav. i.

Anthus trivialis, in Breconshire ; E. A. SWAINSON, Zool. (3) xiv, p. 73 : in North Wales ; J. CORDEAUX, *t. c.* pp. 72 & 73. *A. bertheloti*, eggs figured ; A. KÆNIG, J. f. O. 1890, tab. viii, fig. 7. *A. obscurus*, figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xv. *A. richardi*, in Kent ; W. O. HAMMOND, Zool. (3) xiv, p. 18. *A. cockburniæ*, n. sp. [= *A. sordidus*, Sharpe, nec Rüpp.], Nilghiris ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 305.

Family MNIOTILTIDÆ.

Geothlypis beldingi, nest and eggs ; W. E. BRYANT, Proc. Cal. Ac. Sci. (2) ii, p. 20 : young described ; *id. t. c.* p. 22. *G. trichas ignota*, n. sp., from Florida ; F. M. CHAPMAN, Auk, 1890, pp. 9-14.

Helminthophila celata sordida, n. subsp., San Clemente I., California ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 139. *H. bachmani*, migration and habits in Florida ; W. E. D. SCOTT, Auk, 1890, pp. 16 & 17.

Dendroica dominica, nesting in North Carolina ; C. S. BRIMLEY, *op. cit.* vii, pp. 323-326.

Family CETHIDIÆ.

Tichodroma muraria figured; LORD LILFORD, Col. Fig. Br. Birds, pt. xv: popular notes on (cum fig.); F. DE SCHAECK, Le Nat. xii, pp. 125 & 126.

Family SITTIDÆ.

Sittidæ, notes on the osteology of; F. A. LUCAS, P. U. S. Nat. Mus. xiii, pp. 337-345, pl. xxvii.

Sitta carolinensis atkinsii, n. subsp., Florida; W. E. D. SCOTT, Auk, vii, pp. 118 & 119. *S. [pygmæa] leuconucha*, n. subsp., S. Pedro Mts., Lower California; A. W. ANTHONY, Proc. Cal. Ac. Sci. (2) ii, pp. 77 & 78. *S. whiteheadi* figured; E. H. GIGLIOLI & A. MANZELLA, Iconogr. Avif. Ital. pt. xlv.

Climacteris leucophaea, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xiii, fig. 3. *C. scandens*, egg figured; *id. t. c.* pl. xii, fig. 7. *C. erythrops*, egg figured; *id. t. c.* pl. ix, fig. 11. *C. melanura*; *id. t. c.* pl. ix, fig. 12.

Family MELIPHAGIDÆ.

Entomyza cyanotis, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xii, fig. 1.

Myzantha garrula, egg figured; *id. t. c.* pl. xii, fig. 2. *M. flavigula*; *id. t. c.* pl. xii, fig. 4.

Philemon sordidus, egg figured; *id. t. c.* pl. xii, fig. 3. *P. philippinensis*, n. sp., Samar; J. B. STEERE, List Birds and Mamm. Philipp. p. 21.

Acanthochæra carunculata, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xii, fig. 5.

Anellobia mellivora, egg figured; *id. t. c.* pl. xii, fig. 6.

Melirrhophetes belfordi, n. sp., Owen Stanley Mts., S.E. New Guinea; C. W. DE VIS, Rep. Brit. New Guinea, App. pp. 111 & 112.

Meliphaga phrygia, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xii, fig. 8.

Acanthogenys rufigularis, egg figured; *id. t. c.* pl. xii, fig. 10.

Ptilotis flavicollis, egg figured; *id. t. c.* pl. xii, fig. 13. *P. auricomis*, *P. penicillata*, *P. chrysops*; *id. t. c.* pl. xii, figs. 14-16.

P. lewinii, egg figured; *id. t. c.* pl. xiii, fig. 1. *P. notata*, *P. leucotis*; *id. t. c.* pl. xiii, figs. 4 & 5.

Lichmera australasiana, egg figured; *id. t. c.* pl. xii, fig. 17.

Meliornis sericea, egg figured; *id. t. c.* pl. xii, fig. 19.

Acanthorhynchus tenuirostris, egg figured; *id. t. c.* pl. xii, fig. 20.

Plectorhyncha lanceolata, egg figured; *id. t. c.* pl. xiii, fig. 2.

Glyciphila fulvifrons, egg figured; *id. t. c.* pl. xiii, fig. 6. *G. fasciata*, *G. modesta*; *id. t. c.* pl. xiii, figs. 9 & 10.

Stigmatops ocularis, egg figured; *id. t. c.* pl. xiii, fig. 17.

Melithreptus melanocephalus, egg figured; *id. t. c.* pl. xii, fig. 18.

- Myzomela sanguinolenta*, egg figured ; *id. t. c.* pl. xiii, fig. 20.
Prosthemadera novæ zealandiæ figured ; A. FRENZEL, MB. Deutsch.
 Ver. Schutze, 1890, pl. i.

Family NECTARINIIDÆ.

- Æthopyga andersoni*, n. sp., Upper Burma ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 349.
Chalcoparia not a Sunbird, but a Liotrichine form, probably near *Myzornis* ; *id. t. c.* p. 372.
Nectarinia filiola, n. sp., Equatorial Africa ; G. HARTLAUB, J. f. O. 1890, pp. 150 & 151 [= *N. kilimensis*, Shelley].
Cinnyris guimarasensis, n. sp., Guimaras ; J. B. STEERE, List Birds and Mamm. Philipp. p. 22.
Arachnothera coræ, n. sp., Mindanao ; W. BLASIUS, J. f. O. 1890, p. 148.

Family DICEIDÆ.

The family associated with the *Nectariniidæ*, on account of their serrated tomtia ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 344.

- Dicaeum monticola*, ♂ ♀ figured ; R. B. SHARPE, Ibis, 1890, pl. viii, figs. 2 & 3. *D. besti*, n. sp., Siquijor ; J. B. STEERE, List Birds and Mamm. Philipp. p. 22. *D. erythrorhynchus*, nest and egg figured ; H. E. BARNES, J. Bomb. N. H. Soc. v, pl.

Prionochilus samarensis, n. sp., Samar, Leyte ; J. B. STEERE, List Birds and Mamm. Philipp. p. 22.

Parmoptila woodhousei, Cass., does not belong to the *Diceidæ* but to the *Timeliidæ* ; A. REICHENOW, J. f. O. 1890, p. 127.

Prionochilus johannæ, ♀ described ; J. WHITEHEAD, Ibis, 1890, p. 54.

Achmonorhynchus, n. g. Type, *A. vincens* (Sclater), from Ceylon ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 382.

Pholidornis jamesoni, n. sp., from the Aruwihimi River ; G. E. SHELLEY, Ibis, 1890, p. 163, pl. v, fig. 1.

Family ZOSTEROPIDÆ.

- Zosterops clara* figured ; R. B. SHARPE, Ibis, 1890, pl. viii, fig. 3. *Z. palpebrosa*, nest and egg figured ; H. E. BARNES, J. Bomb. N. H. Soc. v, pl. *Z. pallidipes*, n. sp., Rossel I., Louisiade Archipelago ; C. W. DE VIS, Rep. Brit. New Guinea, App. p. 112. *Z. basilanica*, n. sp., Basilan, Samar, Leyte ; J. B. STEERE, List Birds and Mamm. Philipp. p. 21. *Z. demeryi* and *Z. obsoleta*, n. spp., Liberia ; J. BÜTTIKOFER, Notes Leyd. Mus. xii, pp. 202 & 203.

Family PARIDÆ.

Paridæ, notes on the osteology of ; F. A. LUCAS, P. U. S. Nat. Mus. xiii, pp. 337-345, pl. xxvii.

Parus cristatus, in England ; J. H. GURNEY, Zool. 1890, pp. 210-213 :

figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xvi. *P. ombriosus*, n. sp., Hierro I., Canaries ; E. G. MEADE-WALDO, Ann. N. H. (6) v, p. 103. *P. ultramarinus* and *P. teneriffe* figured ; A. KÖNIG, J. f. O. 1890, tab. iv. *P. amabilis*, in Paláwan ; J. WHITEHEAD, Ibis, 1890, p. 52. *P. palustris* and *P. borealis*, vertical distribution ; F. DE SCHAECK, Bull. Soc. Z. Fr. xv, p. 179. *P. boharensis*, n. var. *intermedius*, Central Asia ; N. ZARUDNOI, Bull. Soc. Imp. Mosc. 1889, pp. 789 & 790.

Auriparus flaviceps ornatus, n. subsp., hab. ? ; W. E. BRYANT, Zoe, i, pp. 149 & 150.

Psaltiriparus minimus californicus, its nest, Berkeley, Cal. ; C. A. KEELER, t. c. p. 151.

Sphenostoma cristata, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. viii, fig. 5.

Xerophila leucopsis, egg figured ; *id. t. c.* pl. ix, fig. 14.

Family CHAMÆIDÆ.

Notes on the osteology of *Chamæidæ* ; F. A. LUCAS, P. U. S. Nat. Mus. xiii, pp. 337-345, pl. xxvii.

Family REGULIDÆ.

Regulus satelles [Zool. Rec. xxvi, *Aves*, p. 51, = *R. teneriffe*, Seeb.], fig. 1, and *R. cristatus*, fig. 2, figured ; A. KÖNIG, J. f. O. 1890, tab. v : eggs of both figured ; *id. t. c.* tab. viii, figs. 8 & 9. *R. teneriffe*, in Palma ; H. B. TRISTRAM, Ibis, 1890, p. 73. *R. calendula*, breeding in Arizona ; J. SWINBURNE, Auk, 1890, pp. 97 & 98.

Family LANIIDÆ.

Lanius major, notes on ; O. V. APLIN, Zool. (3) xiv, pp. 27-29. *L. minor* figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xv. *L. rutilus* figured ; *id. t. c.* *L. homeyeri* breeding in Siebenburgen ; J. VON CSATÓ, Orn. Jahrb. i, pp. 163-167.

Strepera rosa-alba, n. sp., Sudest I., Louisiade Archipelago ; C. W. DE VIS, Rep. Brit. New Guinea, App. p. 110.

Gymnorhina tibicen, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. vii, figs. 4-6. *G. organicum*, egg figured ; *id. t. c.* pl. vii, fig. 9.

Cracticus robustus, egg figured ; *id. t. c.* pl. ix, fig. 8.

Hypocolius ampelinus figured ; P. L. SCLATER, P. Z. S. 1890, p. 147, pl. xv.

Struthidea cinerea, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. viii, fig. 8.

Oreocia cristata, egg figured ; *id. t. c.* pl. viii, fig. 6.

Cochoa is a Thrush ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 158.

Collyriocincla parvissima, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. viii, fig. 1. *C. harmonica* ; *id. t. c.* pl. viii, figs. 2-4. *C. discolor*, n. sp., Rossel I., Louisiades ; C. W. DE VIS Rep. Brit. New Guinea, App. p. 111.

Pachycephala gilberti, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. viii, fig. 10. *P. olivacea* ; *id. t. c.* pl. viii, fig. 11. *P. gutturalis*, egg figured ; *id. t. c.* pl. xii, fig. 9. *P. rufiventris*, *P. melanura* ; *id. t. c.* pl. xii, figs. 11 & 12. *P. meyeri*, n. sp., Mount Arfak ; T. SALVADORI, Mem. R. Accad. Torino (2) xi, p. 230.

Muscitrea grisola (Blyth), associated with *Pachycephala* by Dr. GADOW, is a Flycatcher ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 31.

Hyloterpe homeyeri, n. sp., Sulu Is. ; W. BLASIUS, J. f. O. 1890, p. 143.

Falcunculus frontatus, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. viii, fig. 9.

Family ARTAMIDÆ.

SHARPE, R. B. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. *Artamidæ*. 8vo, 1890, pp. 1-21.

2 genera recognised, *Artamus*, with 17 species, and *Pseudochelidon*, with 1 species.

Artamus hypoleucus, nom. emend. pro "*A. albiventris*, Gould" [*nec* Less.] ; R. B. SHARPE, *t. c.* p. 17. *A. melanops*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. viii, fig. 13. *A. sordidus* ; *id. t. c.* pl. viii, fig. 14.

Family AMPELIDÆ.

Ampelis cedrorum, in Mexico ; G. DESFONTAINES, Nat. Mex. (2) i, pp. 415-418.

Family VIREONIDÆ.

Vireo gracilirostris, n. sp., Fernando Noronha ; R. B. SHARPE, J. L. S. xx, p. 478. *V. flaviviridis*, breeding in Costa Rica ; G. K. CHÉRIÉ, Auk, vii, pp. 329-331. *V. olivaceus* breeds in Western Mexico and Honduras ; O. SALVIN, Ibis, 1890, p. 84. *V. vicinior californicus*, n. subsp. ; F. STEPHENS, Auk, vii, pp. 159 & 160.

Family SYLVIIDÆ.

Sylvia nisoria, in Ireland ; A. G. MORE, Zool. 1890, p. 310. *S. orphea* figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. xv. *S. nisoria* figured ; *id. t. c.*

Phylloscopus superciliosus, in the Scilly Is. ; J. H. JENKINSON, Ibis, 1890, p. 387.

Acanthiza nana, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiii, fig. 16.

Sericornis frontalis, egg figured ; *id. t. c.* pl. ix, fig. 16. *S. citreogularis*, egg figured ; *id. t. c.* pl. ix, fig. 5.

Lusciniola (Herbivocula) schwarzi figured ; TH. PLESKE, Orn. Ross.

taf. iii, figs. 1 & 2. *L. neglecta* ; *id.* taf. iii, figs. 3 & 4. *L. (Dumeticola) intermedia*, figured ; *id.* taf. iii, fig. 5.

Acrocephalus dumetorum, var. *affinis* ; N. ZARUDNOI, Bull. Soc. Imp. Mosc. 1890, pp. 25 & 26.

Acrocephalus (Calamodus) bistrigiceps figured ; TH. PLESKE, Orn. Ross. taf. iii, fig. 6.

Bradypterus alfredi, n. sp., Equatorial Africa ; G. HARTLAUB, J. f. O. 1890, p. 152.

Amytis striatus, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. ix, fig. 10.

Sphenura longirostris, egg figured ; *id.* t. c. pl. viii, fig. 15. *S. brachyptera* ; *id.* t. c. pl. viii, fig. 16.

Malurus, change of plumage in members of this genus ; *id.* P. Linn. Soc. N.S.W. (2) v, pp. 505-509. *M. callainus*, egg figured ; *id.* Nests and Eggs Austr. B. pl. xiii, fig. 18. *M. melanotus* ; *id.* t. c. pl. xiii, fig. 19.

Orthotomus sutorius, nest and eggs figured ; H. E. BARNES, J. Bomb. N. H. Soc. v, pl. i. *O. panayensis*, n. sp., Panay, *O. samarensis*, n. sp., Samar ; J. B. STEERE, List Birds and Mamm. Philipp. p. 20.

Burnesia reichenowi n. sp., Equatorial Africa ; G. HARTLAUB, J. f. O. 1890, pp. 151 & 152.

Family TURDIDÆ.

BELDING, L. The Small Thrushes of California. [With Notes by W. E. BRYANT.] Proc. Cal. Ac. Sci. (2) ii, pp. 57-72.

Notes on *T. ustulatus*, *T. ustulatus swainsoni*, *T. aonalaschkeæ*, *T. aonalaschkeæ auduboni*, and *T. sequoiensis* [*vide infra*].

Coccyzus belongs to the *Turdidæ* ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 158.

Geocichla avensis (Gray) = *G. interpres* (Kuhl.) ; *id.* t. c. p. 138, note. *G. macrorhyncha*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xi, fig. 1.

Turdus merula, notes on habits ; H. P. LEONARD, P. Bristol. Soc. (n.s.) vi, pp. 202-212.

Turdus sequoiensis, n. sp., California ; L. BELDING, Proc. Cal. Ac. Sci. (2) ii, pp. 18 & 19. *T. fuscatus* in Norway ; R. COLLETT, Orn. Jahrb. i, p. 37.

Merula migratoria, roosting habits in summer ; W. BREWSTER, Auk, vii, pp. 360-373. *M. vanuensis*, nom. emend. pro "*M. vitiensis*, Layard" ; H. SERBOHM, P. Z. S. 1890, p. 667. *M. layardi*, n. sp., Viti Levu ; *id.* *ibid.* *M. vinitincta*, nests described and egg figured ; A. J. NORTH, Rec. Austr. Mus. i, p. 36, pl. i, fig. 5. *M. papuensis*, n. sp., Owen Stanley Mts., S.E. New Guinea ; C. W. DE VIS, Rep. Brit. New Guinea, App. p. 112.

Copsychus adamsi, n. sp., Sandakan, N.E. Borneo ; D. G. ELLIOT, Auk, vii, p. 348 [= *C. niger*, Wardlaw Ramsay, R. B. S. in Nature, 1890, p. 647 ; D. G. ELLIOT, Auk, viii, p. 117].

Cossypha bartteloti, n. sp., Aruwimi River ; G. E. SHELLEY, Ibis, 1890, p. 159, pl. v, fig. 2.

Cittocincla melanura figured ; E. MODIGLIANI, Viagg. a Nias, tav. v. *C. cebuensis*, n. sp., Cebu ; J. B. STEERE, List Birds and Mamm. Philipp. p. 20.

Myiadestes townsendi wintering in Montana ; R. S. WILLIAMS, Auk, 1890, p. 98.

Phæornis obscura figured ; S. B. WILSON & A. H. EVANS, Av. Haw, pt. i.

Sialia mexicana anabelæ, n. subsp. ; A. W. ANTHONY, Proc. Cal. Ac. Sci. (2) ii, p. 79.

Grandala is allied to the Redstarts ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 110.

Erithacus superbus [Zool. Rec. xxvi, p. 50], figs. 1 & 2, and *E. rubecula* (Palma), fig. 3 ; A. KÆNIG, J. f. O. 1890, tab. iii : eggs of both figured ; *id. t. c.* tab. viii, figs. 4-6. *E. rubecula* in Palma ; H. B. TRISTRAM, Ibis, 1890, p. 72.

Thamnotæa shelleyi and allies, with identification of *Oenanthe nigra* (V.) ; A. REICHENOW, J. f. O. 1890, pp. 77 & 78.

Pratincola emmæ, n. sp., Equatorial Africa ; G. HARTLAUB, J. f. O. 1890, pp. 152 & 153.

P. robusta, Tristram, is a large race of *P. sybilla*, from Madagascar, and the Indian habitat is erroneous ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 68, note.

Saxicola capistrata distinct from *S. picata* ; *id. t. c.* pp. 71-73. *S. barnesi*, n. sp., Afghanistan ; *id. t. c.* p. 75.

Family CINCLIDÆ.

Cinclus aquaticus in Mecklenberg ; C. STRUCK, Arch. Ver. Mecklenb. xliii, p. 254.

Family TROGLODYTIDÆ.

Troglodytes tanneri, n. sp., Clarion I. ; C. H. TOWNSEND, P. U. S. Nat. Mus. xiii, p. 133. *T. furvus rex*, n. subsp., Bolivia ; H. VON BERLEPSCH & P. LEVERKÜHN, Ornith. vi, p. 6.

Thryothorus ludovicianus lomitensis, n. sp., Rio Grande Valley, Texas ; G. B. SENNETT, Auk, 1890, pp. 57-60. *T. ludovicianus miamensis*, notes on ; J. A. ALLEN, *op. cit.* vii, pp. 115-117.

Family MIMIDÆ.

Mimus arenaceus, n. sp., Bahia ; F. M. CHAPMAN, Auk, vii, pp. 135 & 136.

Family TIMELIIDÆ.

Eupetes macrocerus, new to Borneo ; R. B. SHARPE, Ibis, 1890, p. 366.

Trochalopteron ningpoense, n. sp., Ningpo, China; A. DAVID & E. OUSTALET, Le Nat. xii, pp. 186 & 187.

Dryonastes maesi, n. sp., Tonkin; E. OUSTALET, Bull. Soc. Z. Fr. xv, pp. 154-156. *D. lugens*, note on; *id. t. c.* p. 156. *D. germaini*, n. sp., Cochin China; *id. t. c.* pp. 157-158.

Malacias castanopterus, n. sp., Karen Hills, British Burmah; T. SALVADORI, Ann. Mus. Genov. (2) vii, p. 363.

Crateropus larvatus, n. sp., Madras; E. HARTERT, J. f. O. 1890, pp. 154 & 155.

Psophodes crepitans, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. viii, fig. 7.

Cinclosoma punctatum, egg figured; *id. t. c.* pl. xi, fig. 10.

Grallina picata, egg figured; *id. t. c.* pl. viii, fig. 12.

Pomatostomus temporalis, egg figured; *id. t. c.* pl. ix, fig. 7.

Orthonyx spaldingi, nest described and egg figured; *id. Rec. Austr. Mus.* i, p. 32, pl. i, fig. 2.

Pycnoptilus floccosus, egg figured; *id. Nests and Eggs Austr. B.* pl. ix, fig. 6.

Pyrrholæmus brunneus, egg figured; *id. t. c.* pl. ix, fig. 15.

Macrosphenus flavicans, from the Aruwihimi River; G. E. SHELLEY, Ibis, 1890, p. 160.

✧ *Trichocichla*, n. g. Type, *T. rufa*, n. sp., Viti-Levu; A. REICHENOW, J. f. O. 1890, p. 489.

Origma rubricata, egg figured; A. J. NORTH, Nests and Eggs Austr. B. pl. xiii, fig. 8.

Ephthianura albifrons, egg figured; *id. t. c.* pl. xiii, fig. 11. *E. tricolor*; *id. t. c.* pl. xiii, fig. 12.

Setaria samarensis, n. sp., Mindanao, Samar; J. B. STEERE, List Birds and Mamm. Philipp. p. 16.

Ptilocichla (?) *basilana*, n. sp., Basilan, *P.* (?) *mindanensis*, n. sp., Mindanao; *id. t. c.* p. 18.

Ptilopyga mindanensis, n. sp., Mindanao; W. BLASIUS, J. f. O. 1890, p. 146.

Macronus mindanensis, n. sp., Mindanao, Samar, Leyte; J. B. STEERE, List Birds and Mamm. Philipp. p. 17.

Liothrix lutea (Scop.), from China, distinct from *L. calipyga* (Hodg.), off the Himalayas; H. SEEBOHM, P. Z. S. 1890, p. 343.

Alcippe hueti, from China, is distinct from *A. nipalensis*; *id. t. c.* p. 343.

Mixornis nigrocapitatus, n. sp., Samar and Leyte; J. B. STEERE, List Birds and Mamm. Philipp. p. 17.

Mixornis plateni, n. sp., Mindanao; W. BLASIUS, J. f. O. 1890, p. 147.

Suthora feae, n. sp., Karen Mts., British Burmah; T. SALVADORI, Ann. Mus. Genov. (2) vii, p. 363.

Chalcoparia belongs to the *Liотrichidae*; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 372.

Parmoptila, Cass., considered to belong to this family; A. REICHENOW, J. f. O. 1890, p. 127 [= *Pholidornis (Diceide)*.]

Family PYCNONOTIDÆ.

Hemixus canipennis, n. sp., Foochow, China ; H. SEEBOHM, P. Z. S. 1890, p. 343, pl. xxvii, fig. 1. *H. castanonotus* figured ; *id. t. c.* pl. xxvii, fig. 2.

Iole guimarasensis, n. sp., Guimaras, Panay, Negros ; J. B. STEERE, List Birds and Mamm. Philipp. p. 19. *I. mindorensis*, n. sp., Mindoro ; *id. t. c.* p. 19. *I. siquiorensis*, n. sp. ; *id. ibid.* *I. schmackeri*, n. sp., Mindoro ; E. HARTERT, J. f. O. 1890, pp. 155 & 156 [= *I. mindorensis*, *ut supra*].

Pycnonotus nehrkorni, n. sp., Mindanao ; W. BLASIUS, J. f. O. 1890, p. 147.

Criniger haynaldi, n. sp., Sulu Is. ; *id. t. c.* p. 143.

Poliolophus basilanicus, n. sp., Mindanao and Basilan ; J. B. STEERE, List Birds and Mamm. Philipp. p. 19.

Phacelias, nom. emend. pro "*Kelaartia*, Blyth." ; F. HEINE, Nomencl. Mus. Hein. p. 67.

Irena ellæ, n. sp., Samar and Leyte ; J. B. STEERE, List Birds and Mamm. Philipp. p. 18.

Family CAMPOPAGIDÆ.

Artamides mindorensis, n. sp., Mindoro ; J. B. STEERE, List Birds and Mamm. Philipp. p. 14. *A. mindanensis*, n. sp., Mindanao ; *id. ibid.* *A. panayensis*, n. sp., Guimaras, Panay, and Masbate ; *id. ibid.*

Pteropodocys phasianella, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. ix, fig. 2.

Graucalus hypoleucus, egg figured ; *id. t. c.* pl. ix, fig. 1. *G. mentalis*, *G. melanops* ; *id. t. c.* pl. ix, figs. 3 & 4. *G. longicauda*, n. sp., Owen Stanley Mts., S.E. New Guinea ; C. W. DE VIS, Rep. Brit. New Guinea, App. p. 110.

Edolisoma nehrkorni, n. sp., Waigiou ; SALVADORI, Agg. Orn. Pap. in Mem. R. Accad. Torino (2) xi, p. 217. *E. panayensis*, n. sp., Guimaras and Panay ; J. B. STEERE, List Birds and Mamm. Philipp. p. 14.

Pseudotalage minor, n. sp., Mindanao ; *id. t. c.* p. 15.

Pericrocotus leytenis, n. sp., Leyte ; *id. ibid.*

Family MUSCICAPIDÆ.

Siphia mandellii (Hume) = *Alseonax muttui* (Layard) ; E. W. OATES, *t. c.* p. 36.

Muscicapa ruficauda, Swains., is an *Alseonax* ; *id. ibid.*

Diaphorophya jamesoni, n. sp., Yambuya, Aruwihimi River ; R. B. SHARPE, App. Jameson's "Rear Column," p. 414.

Muscicapa parva, Bechst., and *M. albicilla*, Pall., belong to the genus *Siphia* ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 9. *M. parva*, in Norfolk ; F. M. OGILVIE, P. Z. S. 1890, pp. 616 & 617 : figured ; LORD LIL-

FORD, Col. Fig. Br. Birds, pt. xv : breeding in Steiermark ; P. F. S. BAUER, Orn. Jahrb. i, pp. 112-117 ; in N. Bohemia ; F. KRALERT, *t. c.* pp. 157 & 158.

Erythrosterna sordida, Godw. Aust. = *Cyornis hodgsoni* (Verr.) ♀ ; E. W. OATES, *t. c.* p. 16.

Muscicapula mindanensis, n. sp., Mindanao ; W. BLASIUS, J. f. O. 1890, pp. 147 & 148.

Chasiempis sclateri, Ridgw., and *C. ibidis*, Stejn., = *C. sandwichensis* (Gm.), all collected in Oahu I. by Prof. Behn ; H. v. BERLEPSCH & P. LEVERKÜHN, Orn. vi, pp. 2-5, taf. 1, fig. 3.

Heteromyias cinereifrons, nest described and egg figured ; A. J. NORTH, Rec. Austr. Mus. i, pp. 37 & 38, pl. i, fig. 4.

Pacilodryas (?) *sigillata*, n. sp., Owen Stanley Mts., New Guinea ; C. W. DE VIS, Rep. Brit. New Guinea, App. p. 109.

Hypothymis samarensis, n. sp., Samar and Leyte ; J. B. STEERE, List Birds and Mamm. Philipp. p. 16. *H. ceylonensis*, Sharpe, = *H. azurea* (Bodd.), but *H. tytleri* (Beavan) from the Andamans, is distinct ; E. W. OATES, *t. c.* pp. 49 & 56.

Cyanomyias helenæ, n. sp., Samar ; J. B. STEERE, List Birds and Mamm. Philipp. p. 16.

Todopsis kowaldi, n. sp., Owen Stanley Mts., S.E. New Guinea ; C. W. DE VIS, Rep. Brit. New Guinea, App. pp. 109 & 110.

Trochocercus nigromitratus distinct from *T. nitens*, Cass. ; A. REICHENOW, J. f. O. 1890, pp. 118 & 119.

Rhipidura albicularis, n. sp., S.E. New Guinea ; C. W. DE VIS, Rep. Brit. New Guinea, App. p. 108.

Terpsiphone insularis figured ; E. MODIGLIANI, Viagg. a Nias, taf. xi. *T. nicobarica*, n. sp., Andaman and Nicobar Is. ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 48.

Cryptolopha montis, in Palawan (2000 feet) ; J. WHITEHEAD, Ibis, 1890, p. 48.

Arses orientalis, n. sp., Rigo, S.E. New Guinea ; T. SALVADORI, Ann. Mus. Genov. (2) ix, p. 566.

Piezorhynchus florenciæ, n. sp., Solomon Is. ; R. B. SHARPE, Ibis, 1890, p. 206.

Monarcha melanops, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. ix, fig. 9.

Pomarea leucophthalmus, n. sp., Howla I., Solomons ; E. P. RAMSAY, Rec. Austr. Mus. i, pp. 4 & 5.

Cyornis : the genus contains, amongst other species, the following :—*Muscitrea cyanea*, Hume, *Poliomyias hodgsoni* (Verr.), *Muscicapula hyperythra* (Blyth), *Digenea leucomelanura*, Hodgs., *D. cerviniventris*, Sharpe, *Muscicapa superciliaris*, Jerd., *M. melanoleuca*, Blyth, *M. astigma*, Hodgs., *Muscicapula sapphira*, Tickell ; E. W. OATES, Faun. Brit. Ind., Birds, ii, pp. 11-20.

Niltava oatesi, Salvad., *Muscicapa pallidipes* (Jerd.), also belong to *Cyornis* ; *id. t. c.* pp. 20-22.

Siphia is distinct from *Cyornis* ; *id. t. c.* p. 7.

S. everetti, n. sp., Mt. Penrisen, Borneo ; R. B. SHARPE, Ibis, 1890, p. 366. *S. vordermanni*, n. sp., Java, *S. elopurensis*, n. sp., N.E. Borneo ; *id. t. c. p.* 206.

Cyornis poliogenys, Brooks, and *C. olivacea*, Hume, belong to the genus *Anthipes* ; E. W. OATES, *t. c. pp.* 33 & 34.

Muscitrea grisola (Blyth) is allied to *Anthipes* ; *id. t. c. p.* 30.

Family HIRUNDINIDÆ.

SHARPE, R. B., & WYATT, C. W. A Monograph of the *Hirundinidæ*, or Family of Swallows. Pts. xiii & xiv.

The species described and figured are *Stelgidopteryx serripennis*, *Petrochelidon pyrrhonota*, *P. swainsoni* × *erythrogastra*, *P. spilodera*, *Cotile cincta*, *C. paludicola*, *Hirundo euchrysea*, *H. daurica*, *H. striolata*, *H. nipalensis*, *H. erythropygia*, *Chelidon nipalensis*, and *Tachycineta albiventris*.

Hirundo rustica, notes on the plumage ; J. BÜTTIKOFER, Notes Leyd. Mus. xii, pp. 198–206 : at sea ; H. E. PUREY-CUST, Nature, xlii, p. 100 : curious nest ; W. W. FOWLER, *op. cit.* xliii, pp. 80 & 318 ; R. H. READ, *t. c. p.* 176 : rate of flight ; J. VIAN, Bull. Soc. Z. Fr. xv, pp. 82 & 83. *H. urbica*, rate of flight ; X. RASPAIL, *t. c. pp.* 103–105. *H. japonica*, T. & S., and *H. substriolata*, Hume, = *H. striolata*, Temm. ; E. W. OATES, Faun. Brit. Ind., Birds, ii, p. 281. *H. intermedia*, Hume, = *H. daurica*, Linn. ; *id. t. c. p.* 282.

Cecropis arctivitta, Swinh., = *H. nepalensis*, Hodgs. ; *id. t. c. p.* 282.

Callichelidon cyaneoviridis in Florida ; W. E. D. SCOTT, Auk, vii, p. 265.

Petrochelidon fulva in Florida ; *id. t. c. p.* 264. *P. nigrifrons*, egg figured ; A. J. NORTH, Nests and Eggs Austr. B. pl. xiii, fig. 14.

Cheramœca leucosternum, egg figured ; *id. t. c. pl. xiii*, fig. 15.

Section B. OLIGOMYODÆ.

Family TYRANNIDÆ.

Todirostrum cinereum, nesting habits ; G. K. CHERIE, Auk, vii, pp. 233–235.

Elainea pagano, nest ; *id. t. c. p.* 235.

Myiozetetes texensis, nest ; *id. t. c. p.* 235.

Empidonax pusillus and *E. difficilis*, nests and eggs ; H. R. TAYLOR, Proc. Cal. Ac. Sci. (2) ii, pp. 88 & 89.

Myiarchus tyrannulus chlorepsciscus, n. subsp., Matto Grosso ; H. v. BERLEPSCH & P. LEVERKÜHN, Ornith., vi, pp. 16 & 17.

Family PIPRIDÆ.

Piprites griseiceps figured ; O. SALVIN & F. D. GODMAN, Biol. Centr. Am., Aves, ii, pl. xli, fig. 3.

Chiromachæris aurantiaca figured ; *iid. t. c.* tab. xli, figs. 1 & 2.

Heterocercus angosturæ, n. sp., Angostura ; H. v. BERLEPSCH & P. LEVERKÜHN, *Ornis*, vi, p. 18.

Family COTINGIDÆ.

Tityra pelzelni, n. sp., Brazil ; O. SALVIN & F. D. GODMAN, *Biol. Centr. Am., Aves*, ii, p. 120, note. *T. buckleyi*, n. sp., E. Ecuador ; *iid. t. c.* p. 120, note.

Platypsaris albiventris, from Southern Arizona ; W. W. PRICE, *Proc. Cal. Ac. Sci.* (2) ii, p. 89.

Pachyrhamphus cinereiventris figured ; O. SALVIN & F. D. GODMAN, *Biol. Centr. Am., Aves*, ii, pl. xliii, fig. 1. *P. albogriseus*, ♂ ♀ figured ; *iid. t. c.* pl. xliii, figs. 2 & 3.

Carpodectus nitidus figured ; *iid. t. c.* pl. xlii.

Family PITTIDÆ.

Pitta lorix, n. sp., Su-a-u I., S.E. New Guinea ; T. SALVADORI, *Ann. Mus. Genov.* (2) ix, p. 579. *P. strepitans*, egg figured ; A. J. NORTH, *Nests and Eggs Austr. B.* pl. xi, fig. 7. *P. simillima*, *P. macklotii* ; *id. t. c.* pl. xi, figs. 8 & 9.

Family DENDROCOLAPTIDÆ.

SCLATER, P. L. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. [Vol. xv of *The Catalogue of Birds.*] *Tracheophona*. 8vo, 1890.

5 subfamilies recognised : I. *Furnariinæ* (39 species) ; II. *Synallaxinæ* (101 species) ; III. *Philydorinæ* (67 species) ; IV. *Sclerurinæ* (6 species) ; V. *Dendrocolaptinæ* (80 species).

ELLIOT, D. G. A Study of the Genus *Dendroornis* and its Species. *Auk*, vii, pp. 160-189.

22 species recognised. Supplementary notes ; *id. t. c.* pp. 207 & 208.

Subfamily FURNARIINÆ.

Geositta crassirostris figured ; P. L. SCLATER, *Cat. Birds Brit. Mus.* xv, pl. i.

Furnarius torridus figured ; *id. t. c.* pl. ii.

Subfamily SYNALLAXINÆ.

Synallaxis adusta figured ; P. L. SCLATER, *Cat. Birds Brit. Mus.* xv, pl. iii. *S. [lege Siptornis, p. 62] subcristata* figured ; *id. t. c.* pl. iv. *S. cabanisi*, n. sp., Peru ; H. v. BERLEPSCH & P. LEVERKÜHN, *Ornis*, vi, pp. 21 & 22. *S. heterocerca*, n. sp., Argentine Republic ; *iid. t. c.* pp. 22-24.

Subfamily PHILYDORINÆ.

✓ *Phacelodomus*, nom. emend. pro "*Phacellodomus* or *Placellodomus*, auct."; P. L. SCLATER, Cat. Birds Brit. Mus. xv, p. 79. *P. rufipennis* figured; *id. t. c.* pl. v.

Automolus holostictus and *A. rubidus* figured; *id. t. c.* pls. vi & vii.

Philydor erythronotus and *P. consobrinus* figured; *id. t. c.* pls. viii & ix.

Homorus galatheæ figured; H. v. BERLEPSCH & P. LEVERKÜHN, Orn. vi, p. 24, taf. ii, fig. 1.

Subfamily DENDROCOLAPTINÆ.

Dendroornis polysticta figured; P. L. SCLATER, Cat. Birds Brit. Mus. xv, pl. x. *D. lineatocapilla*, n. sp., Angostura; H. v. BERLEPSCH & P. LEVERKÜHN, Orn. vi, pp. 24 & 25, taf. i, fig. 1.

Xiphocolaptes procervus, Cab., described; R. RIDGWAY, P. U. S. Nat. Mus. xiii, p. 47. *X. albicollis* (Licht.), described; *id. t. c.* p. 48.

Family FORMICARIIDÆ.

SCLATER, P. L. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. [Vol. xv of The Catalogue of Birds.] *Tracheophonæ*, *Formicariidæ*. 8vo, 1890.

The family is divided into 3 subfamilies: I. *Thamnophilinæ* (80 species); II. *Formicariinæ* (130 species); III. *Grallariinæ* (44 species).

Subfamily THAMNOPHILINÆ.

Thamnophilus puncticeps, nom. emend. pro "*T. pollutus*, Scl. & Salv. (*nec* Licht.), ex Ecuador"; P. L. SCLATER, Cat. Birds Brit. Mus. p. 212. *T. æthiops*, ♂ ♀ figured; *id. t. c.* pl. xi. *T. nigriceps* figured; *id. t. c.* pl. xii. *T. insignis* figured; *id. t. c.* pl. xiii. *T. albinuchalis* figured; *id. t. c.* pl. xiv.

Subfamily FORMICARIINÆ.

Myrmotherula erythrura, ♂ ♀ figured; P. L. SCLATER, Cat. Birds Brit. Mus. xv, pl. xv. *M. inornata*, n. sp. (*ex* Berlepsch MSS.), = *M. unicolor*, Salv. (*nec* Ménér.), Guiana and Colombia; *id. t. c.* p. 243. *M. behni*, n. sp., Bogotá; H. v. BERLEPSCH & P. LEVERKÜHN, Orn. vi, pp. 25 & 26, taf. i, fig. 2.

Myrmeciza pelzelni, n. sp. (= *M. ruficauda*, Pelz., *nec* Neuwied), Cayenne and Lower Amazonia; P. L. SCLATER, Cat. Birds Brit. Mus. xv, p. 283.

Hypocnemis lepidonota, ♂ ♀ figured; P. L. SCLATER, Cat. Birds Brit. Mus. xv, pl. xvi.

Subfamily GRALLARIINÆ.

Grallaria haplonota (pl. xvii), *G. erythrotis* (pl. xviii), *G. rufocinerea* (pl. xix), *G. fulviventris* (pl. xx), figured; P. L. SCLATER, Cat. Birds Brit.

Mus. xv. *G. nigrolineata*, n. sp. (ex Berlepsch MSS.), Venezuela ; *id. t. c.* p. 321. *G. haplonota*, Sel., figured ; H. v. BERLEPSCH & P. LEVERKÜHN, Ornith., vi, p. 27, taf. ii, fig. 2. *G. imperator intercedens*, n. subsp., Bahia ; *id. t. c.* p. 27.

↓ *Cubobæmon*, nom. emend. pro "*Pittasoma*, Cass." ; F. HEINE, Nomencl. Mus. Hein. p. 123.

↓ *Thamnocharis*, n. g. Type, *T. dignissima* (Sel. & Salv.) ; P. L. SCLATER, Cat. Birds Brit. Mus. xv, p. 210.

Family CONOPOPHAGIDÆ.

SCLATER, P. L. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. [Vol. xv of The Catalogue of Birds.] *Tracheophonæ, Conopophagidæ* [pp. 329-336].

11 species admitted.

Family PTEROPTOCHIDÆ.

SCLATER, P. L. Catalogue of the *Passeriformes* or Perching Birds in the Collection of the British Museum. [Vol. xv of The Catalogue of Birds.] *Tracheophonæ, Pteroptochidæ* [pp. 337-352].

21 species admitted.

Lioscelis erythræus, n. sp., W. Ecuador ; P. L. SCLATER, Cat. Birds Brit. Mus. xv, p. 345.

PASSERES ABNORMALES.

The species of *Atrichia* described ; R. B. SHARPE, Cat. Birds Brit. Mus. xiii, pp. 659-660.

REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER.

GENERAL.*

COPE, E. D. Synopsis of the Families of Vertebrata. Am. Nat. xxiii, pp. 849-877. [Issued March, 1890.]

Batrachians and Reptiles are classified as follows :—

Class BATRACHIA.

Subclass I. STEGOCEPHALI.

Order I. GANOCEPHALI. Fams. *Trimerorhachidæ*, *Archegosauridæ*.

Order II. RHACHITOMI. Fam. *Eryopidæ*.

Order III. EMBOLOMERI. Fam. *Cricotidæ*.

Order IV. MICROSAURI. Fams. *Branchiosauridæ*, *Hylonomidæ*, *Molgophidæ*, *Phlegthontiidæ*.

Subclass II. URODELA.

Order I. PROTEIDA. Fam. *Proteidæ*.

Order II. PSEUDOSAURIA. Fam. *Cryptobranchidæ*, *Amblystomidæ*, *Hynobiidæ*, *Plethodontidæ*, *Thoriidæ*, *Desmognathidæ*, *Salamandridæ*, *Pleurodelidæ*, *Amphiumidæ*, *Cæciliidæ*.

Order III. TRACHYSTOMATA. Fam. *Sirenidæ*.

Subclass III. SALIENTIA:

Order. ANURA.

Suborder 1. AGLOSSA. Fams. *Xenopidæ*, *Pipidæ*.

Suborder 2. ARCIFERA. Fams. *Discoglossidæ*, *Buфонidæ*, *Deudrophryniscidæ*, *Asterophrydidæ*, *Pelodytidæ*, *Scaphiopidæ*, *Hylidæ*, *Cystignathidæ*, *Amphignathodontidæ*, *Hemiphractidæ*.

Suborder 3. GASTRECHMIA. Fam. *Hemisidæ*.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

Suborder 4. FIRMISTERIA. Fams. *Engystomida*, *Phryniscida*, *Dendrobatida*, *Cophylida*, *Dyscophida*, *Colostethida*, *Ranida*, *Ceratobatrachida*.

Class MONOCONDYLIA.

Subclass I. REPTILIA.

Order I. ICHTHYOPTERYGIA. Fams. *Ichthyosaurida*, *Mixosaurida*.

Order II. TESTUDINATA.

Suborder 1. ATHECÆ. Fam. *Dermochelyda*.

Suborder 2. TRIONYCHOIDEA. Fam. *Trionychida*.

Suborder 3. CRYPTODIRA. Fams. *Cheloniida*, *Testudinida*, *Cinosternida*, *Dermatemydidæ*, *Chelydridæ*, *Baenida*, *Adocida*.

Suborder 4. PLEURODIRA. Fams. *Pleurosternida*, *Sternotherida*, *Pelomedusida*, *Plesiochelydida*, *Chelydida*, *Carettochelydida*.

Order III. THEROMORA.

Suborder 1. PLACODONTIA. Fam. *Placodontida*.

Suborder 2. PROGANOSAURIA. Fams. *Mesosaurida*, *Procolophodontida*, *Paleohutteriida*, *Homoeosaurida*, *Proterosaurida*, *Rhynchosaurida*.

Suborder 3. PARASUCHIA. Fams. *Belodontida*, *Ætosaurida*.

Suborder 4. ANOMODONTIA. Fam. *Dicynodontida*.

Suborder 5. PELYCOSAURIA. Fams. *Clepsydropida*, *Pariotichida*, *Bolosaurida*.

Suborder 6. COTYLOSAURIA. Fams. *Pariasaurida*, *Dialectida*.

Order IV. PLESIOSAURIA. Fam. *Plesiosaurida*, *Nothosaurida*, *Lariosaurida*.

Order V. ORNITHOSAURIA. Fams. *Pteranodontida*, *Pterodactylida*.

Order VI. DINOSAURIA.

Suborder 1. SAURISCHIA. Fams. *Cetiosaurida*, *Cælorida*, *Megalosaurida*.

Suborder 2. ORTHOPODA. Fams. *Agathaumida*, *Omosaurida*, *Scelidosaurida*, *Iguanodontida*.

Order VII. CROCODILIA. Fams. *Crocodilida*, *Goniopholidæ*, *Teleosaurida*.

Order VIII. RHYNCHOCEPHALIA.

Suborder 1. SPHENODONTINA. Fam. *Sphenodontida*.

Suborder 2. CHORISTODERA. Fam. *Champsosaurida*.

Order IX. SQUAMATA.

Suborder 1. LACERTILIA. (For minor divisions, see Zool. Rec. xxiv, *Rept.* p. 7.)

Suborder 2. PYTHIOMORPHA. Fams. *Plioplatecarpida*, *Mosasaurida*.

Suborder 3. OPHIDIA.

Superfam. 1. CATODONTA. Fam. *Stenostomidæ*.Superfam. 2. EPANODONTA. Fam. *Typhlopidae*.Superfam. 3. TORTRICINA. Fams. *Tortricidæ*, *Uropeltidæ*.Superfam. 4. ASINEA. Fams. *Xenopeltidæ*, *Pythonidæ*, *Boidæ*, *Charinidæ*, *Acrochordidæ*, *Nothopsideæ*, *Colubridæ*.Superfam. 5. PROTEROGLYPHA. Fams. *Hydrophidæ*, *Najidæ*, *Elapidæ*, *Dendraspididæ*.Superfam. 6. SOLENOGLYPHA. Fams. *Causidæ*, *Atractaspididæ*, *Viperidæ*, *Crotalidæ*.

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This part concludes the account of the Reptilia.

STEINMANN, G., & DÖDERLEIN, L. Elemente der Palæontologie. II. Hälfte. Evertebrata (Schluss) und Vertebrata. Leipzig: 1890, 8vo, pp. 337-848, figs.

Vertebrata by L. DÖDERLEIN. Batrachians and Reptiles, pp. 587-668. The Amphibia (Batrachia), Reptilia, and Mammalia are grouped together as *Quadrupeda*. The *Saururæ* and Birds are regarded as orders of a class, *Sauropsida*, which contains the various orders of Reptilia.

LYDEKKER, R. Catalogue of the Fossil Reptilia and Amphibia in the British Museum (Natural History). Part iv. Containing the Orders *Anomodontia*, *Ecaudata*, *Caudata*, and *Labyrinthodontia*; and Supplement. London: 1890, 8vo, 295 pp., woodcuts.

RÖSE, C. Beiträge zur vergleichenden Anatomie des Herzens der Wirbelthiere. Morph. JB. xvi, pp. 27-96, pls. iv & v.

LEYDIG, F. Das Parietalorgan der Amphibien und Reptilien. Anatomisch-histologische Untersuchung. Abh. Senck. Ges. xvi, pp. 441-550, 7 pls.

After describing the parietal organ in Batrachians, *Lacerta*, *Varanus*, *Anguis*, *Chalcides*, and *Sphenodon*, and especially the two additional parietal "eyes" in *Anguis* [discovered by M. DUVAL & KALT, CR. Soc. Biol. (9) i, 1883, p. 85], the author sums up by stating that in his belief the question of the significance of this organ remains as obscure as ever; a comparison with the ocelli of insects, although open to much criticism, appears to him not to be out of question.

—. Das Parietalorgan. Zweite vorläufige Mittheilung. Biol. Centralbl. x, pp. 278-285.

SELENKA, E. Das Stirnorgan der Wirbeltiere. Z. c. pp. 323-326.

BORN, G. Ueber das Scheitelauge. J. Ber. Schles. Ges. lxvii, pp. 14-17.

DOGIEL, A. S. Methylenblautinktion der motorischen Nervenendigungen in den Muskeln der Amphibien und Reptilien. Arch. mikr. Anat. xxxv, pp. 305-320, pl. xvi.

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Heft 1, pp. 1-48, pl. v. *Chelonia* and introduction to *Lacertilia*.

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MEYER, A. B., & HELM, F. V. Jahresbericht über ornithologischen Beobachtungstationen im Königreich Sachsen. Anhang. Reptilien und Amphibien, pp. 72-74.

LINK, J. A. Kriechthiere und Lurche der Hassberge und deren Umgebung. Ber. naturf. Ges. Bamberg, xv, pp. 26-35.

FATIO, V. Faune des Vertébrés de la Suisse. Vol. v. (Geneva : 1890.)

A supplement of 13 pp. is devoted to the Reptiles and Batrachians. For a first supplement, cf. Zool. Rec. xix, *Rept.* p. 2.

On the Snakes of the French Jura ; DE CHAIGNON, Bull. Soc. Saone, iv, pp. 288-293.

BEDRIAGA, J. DE. Amphibiens et Reptiles recueillis en Portugal par M. Adolphe F. Moller. Coimbra : 1890, 8vo, 87 pp.

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MINÀ-PALUMBO, F. Rettili ed Anfibi Nebrodensi. Nat. Sicil. ix, pp. 91-95, 256-261, 279-283, & x, pp. 5-8.

Continuation. (Cf. Zool. Rec. xxvi, *Rept.* p. 3.)

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ASIA.

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ZAROUDNOÏ, N. Recherches Zoologiques dans la Contrée Transcaspienne. Reptiles et Amphibies. Bull. Mosc. 1890, pp. 288-298.

PFEFFER, G. Die Fauna der Insel Jeretik, Port Wladimir, an der Murman-küste, nach den Sammlungen des Herrn Kapitän Horn. 1. Teil. Die Reptilien, Amphibien, Fische, Mollusken, Brachiodon, Krebse, Pantopoden, and Echinodermen. JB. Hamb. vii, pp. 63-96.

Lacerta vivipara, Jacq., and *Rana arvalis*, Nilsson [no doubt *R. temporaria* is the frog collected, not *R. arvalis*.—REC.], p. 74.

BOULENGER, G. A. A List of the Reptiles and Batrachians of Amoorland. Ann. N. H. (6) v, pp. 137-144, pl. ix.

[To the species mentioned should be added *Trionyx chinensis*, Wiegman.—REC.]

—. The Fauna of British India, including Ceylon and Burma. Reptilia and Batrachia. London: 1890, 8vo, xviii, 541 pp., 142 figs.

WEBER, M. Reptilia from the Malay Archipelago. I. *Sauria*, *Crocodylidae*, *Chelonia*. M. Weber's Zoologische Ergebnisse (Leyden: 1890), pp. 159-177, pl. xiv.

On a collection made in Sumatra, Java, Flores, Celebes, and Saleyer.

LIDTH DE JEUDE, T. W. VAN. Reptilia from the Malay Archipelago. II. *Ophidia*. T. c. pp. 178-192, pls. xv & xvi.

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Remarks on the above paper by BOULENGER, P. Z. S. 1890, p. 32.

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BÜTTIKOFER, J. Reisebilder aus Liberia. II. Die Bewohner Liberia's.-Thierwelt. Leyden: 1890, 8vo, 510 pp., figs., pls.

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AMERICA.

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RIDLEY, H. N. Notes on the Zoology of Fernando Noronha. Reptilia, by G. A. BOULENGER, J. L. S. xx, pp. 481 & 482.

PAPUASIA, AUSTRALIA, AND POLYNESIA.

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REPTILIA.

BRAUNS, D. Ein Beitrag zu der Stammesgeschichte der Sauropsiden. Leopoldina: 1890, pp. 147-152, 160-164, 186-188, & 201-203, woodcuts.

This careless compilation concludes with a classification of the Reptiles, to which, as based to a great extent on misrepresentations, mere allusion here will be sufficient.

BRONN, H. G. Klassen und Ordnungen des Thierreichs. vi. Abth. iii. Reptilia, by C. K. HOFFMANN. Lief. 67-69, pp. 2017-2089, pls. clxiii-clxx.

Concludes the account of the embryology.

*TSCHAN, A. Recherches sur l'extrémité antérieure des Oiseaux et des Reptiles. Geneva: 1889, 8vo, 63 pp. [Abstract in JB. Mineral. 1891, i, p. 145.]

BUTLER, G. W. On the Subdivision of the Body-cavity in Lizards, Crocodiles, and Birds. P. Z. S. 1889, pp. 452-474, pls. xlv-xlix.

—. On the Relations of the Fat-bodies of the Sauropsida. T. c. pp. 602-613, pls. lix & lx.

Deals principally with the relations of the Fat-bodies of Lizards and Crocodiles.

WIEDERSHEIM, R. Ueber die Entwicklung des Urogenitalapparates bei Crocodilien und Schildkröten. Arch. mikr. Anat. xxxvi, pp. 410-464, figs., pls. xvi-xviii. [Abstract in Zool. Anz. v, pp. 337-344.]

CHIARUGI, G. Lo Sviluppo dei Nervi vago, accessorio, ipoglosso e primi cervicali nei Sauropsidi e nei Mammiferi. Atti (Mem.) Soc. Tosc. x, pp. 149-214, pls. xi & xii.

STADERINI, R. Sopra la distribuzione dei Nervi glosso-faringeo, vago e ipoglosso in alcuni Rettili ed Uccelli. Atti Acc. Fisiocr. Siena (4) i, pp. 585-597, figs. [1889].

SQUAMATA.

LACERTILIA.

BOULENGER, G. A. First Report on Additions to the Lizard Collection in the British Museum (Natural History). P. Z. S. 1890, pp. 77-86, pls. viii-xi.

A list of the (93) species added since January, 1887, with descriptions of new genera and species.

OPPEL, A. Ueber Vorderkopfsomiten und die Kopfhöhle von *Anguis fragilis*. Arch. mikr. Anat. xxxvi, pp. 603-627, pl. xxx.

WILL, L. Zur Entwicklungsgeschichte des Gecko's. Biol. Centralbl. x, pp. 592-600, figs.

GECKONIDÆ.

Saurodactylus, Fitz., is a valid genus; BOULENGER, P. Z. S. 1890, p. 77.

Gymnodactylus darmandvillei, n. sp., M. WEBER, Zool. Ergebn. p. 163, pl. xiv, fig. 1, Flores. *G. baluensis*, n. sp., MOCQUARD, Le Nat. xii, p. 144, and N. Arch. Mus. (3) ii, p. 125, pl. vii, fig. 1, Kina Baloo, Borneo.

Agamura cruralis, Blanf., figured by BOULENGER, Faun. Ind., Rept. fig. 23.

Hemidactylus gleadowii, Murray, figured by BOULENGER, t. c. fig. 27. *H. craspedotus*, n. sp., MOCQUARD, Le Nat. xii, p. 145, and N. Arch. Mus. (3) ii, p. 126, pl. vii, fig. 2, North Borneo.

Lygodactylus fischeri, n. sp., BOULENGER, P. Z. S. 1890, p. 80, pl. viii, fig. 1, Sierra Leone.

Perochirus mestoni, n. sp., DE VIS, P. Linn. Soc. N.S.W. (2) iv, p. 1035, Queensland.

Ptychozoon homalocephalum, Cuv., figured by BOULENGER, Faun. Ind., Rept. fig. 31. Note on the eggs; M. WEBER, Zool. Ergebn. p. 165.

✓ *Platypholis*, n. g., differing from *Homopholis*, Blgr., in the juxtaposed scales and the presence of præanal pores; BOULENGER, P. Z. S. 1890, p. 80. *P. fasciata*, n. sp., *id.* t. c. p. 81, pl. viii, fig. 2, Mombasa, E. Africa.

EUBLEPHARIDÆ.

Eublepharis macularius, Blyth, figured by BOULENGER, Faun. Ind., Rept. fig. 33. Recorded from Transcaspia; *id.* Ann. N. H. (6) vi, p. 352.

AGAMIDÆ.

Draco obscurus, Blgr., figured by MOCQUARD, N. Arch. Mus. (3) ii, pl. viii, fig. 1.

Gonycephalus modestus, Mey., and *dilophus*, D. & B., redescribed by DOUGLAS-OGILBY, Rec. Austral. Mus. i, pp. 90 & 92.

↓ *Pelturagonia*, n. g., for *P. cephalum*, n. sp.; MOCQUARD, Le Nat. xii, p. 144, and N. Arch. Mus. (3) ii, p. 130, pl. vii, fig. 4, Kina Baloo, Borneo. [= *Japalura nigrilabris*, Ptrs.—REC.]

Calotes cristatellus, Kuhl, notes on the eggs; MOCQUARD, N. Arch. Mus. (3) ii, pp. 129 & 164, pl. vii, fig. 3. *C. versicolor*, Daud., figured by BOULENGER, Faun. Ind., Rept. fig. 42.

Agama micropholis, n. sp., MATSCHKE, Zool. Jahrb., Syst. v, p. 607, Transvaal.

Lophura amboinensis, Schloss., var. *celebensis*, Ptrs., notes by M. WEBER, Zool. Ergebn. p. 167.

Uromastix hardwickii, Gray, figured by BOULENGER, Faun. Ind., Rept. fig. 45.

IGUANIDÆ.

G. A. BOULENGER, Ann. N. H. (6) vi, pp. 412–414, describes the distinctive cranial characters of the Iguanoids allied to *Iguana*, viz.: *Amblyrhynchus*, Bell, *Conolophus*, Fitz., *Brachylophus*, Wagl., *Iguana*, Laur., *Metopoceros*, Wagl., *Cyclura*, Harl., and *Ctenosaura*, Wiegman.

Anolis salvini, Blgr., *sallæi*, Gthr., *tropidolepis*, Blgr., *ustus*, Cope, *godmani*, Blgr., and *crassulus*, Cope, figured by GÜNTHER, Biol. C. Am., Rept. pl. xxvii. *A. panamensis*, n. sp., BOULENGER, P. Z. S. 1890, p. 81, pl. viii, fig. 3, Panama.

Basiliscus vittatus, Wgm., figured by GÜNTHER, *op. cit.* pl. xxviii.

Tropidurus albemarlensis, *indefatigabilis*, *delanonis*, *duncanensis* [= *T. grayi*, Bell], and *abingdonii* [= *T. pacificus*, Stdr.], n. spp., BAUR, Biol. Centralbl. x, pp. 478 & 479, Galapagos Is.

Liocephalus bolivianus, n. sp., BOULENGER, P. Z. S. 1890, p. 82, pl. ix, Bolivia.

Ctenosaura completa, Bocourt, figured by GÜNTHER, *op. cit.* pls. xxix & xxx.

Crotaphytus baileyi, n. sp., STEJNEGER, N. Am. Faun. No. 3, p. 103, pl. xii, fig. 1, New Mexico, Arizona, Utah, Nevada, N. Mexico. *C. silus*, n. sp., *id. t. c.* p. 105, California and State of Washington.

Uta stansburiana, B. & G., p. 106, *ornata*, B. & G., p. 107, and *symmetrica*, Baird, p. 108: notes by STEJNEGER, *t. c.* *U. levis*, n. sp., *id. t. c.* p. 108, New Mexico. *U. clarionensis*, n. sp., Townsend, P. U. S. Nat. Mus. xiii, p. 143, Clarion Is.

Holbrookia maculata flavilenta, Cope: note by STEJNEGER, *t. c.* p. 109.

Sceloporus omiltemanus, p. 66, Omilteme, Mexico, *irazuensis*, p. 67, Costa Rica, *salvini*, p. 68, Jalapa and Guatemala, *rubriventris*, p. 72, Omilteme, Mexico, *jalapæ*, p. 74, Jalapa, *pleurolepis*, p. 74, Jalisco, Mexico, and *teapensis*, p. 75, Teapa, Mexico, n. spp., GÜNTHER, *op. cit.* *S. elongatus*, n. sp., STEJNEGER, *t. c.* p. 111, Arizona.

Phrynosoma orbiculare, Hern. : anatomical and physiological notes by HERRERA, Nat. Mex. (2) i, p. 332. *P. hernandesi*, Gir., p. 112, and *ornatissima*, Gir., p. 115, pl. xii, figs. 3 & 4 : notes by STEJNEGER, *t. c.*

ZONURIDÆ.

Zonurus vittifer, Reichen. : noté by MATSCHIE, Zool. Jahrb., Syst. v, p. 606.

Platysaurus intermedius, n. sp., *id. ibid.*, Transvaal.

Chamaesaura didactyla, n. sp., BOULENGER, P. Z. S. 1890, p. 82, pl. xi, fig. 1, S. Africa.

ANGUIDÆ.

Barissia imbricata, Wgm. : notes by STEJNEGER, P. U. S. Nat. Mus. xiii, p. 183. *B. levicollis*, n. sp., *id. t. c.* p. 184, Mexican boundary of the United States.

Ophisaurus gracilis, Gray, figured by BOULENGER, Faun. Ind., Rept. p. 159.

Diploglossus lessonæ, n. sp., PERACCA, Boll. Mus. Zool. Anat. Comp. Torino, v, No. 77, Brazil.

HELODERMATIDÆ.

SHUFELDT, R. W. Contributions to the Study of *Heloderma suspectum*. P. Z. S. 1890, pp. 148-244, pls. xvi-xviii.

Deals fully with the natural history and anatomy of this Lizard, and gives a complete bibliography. The author reserves his opinion on the systematic position of the *Helodermatidæ*.

Heloderma suspectum, Cope: note on its habits; GARMAN, Bull. Ess. Inst. xxii, p. 60.

XANTUSIIDÆ.

Xantusia riversiana, Cope, is from San Nicholas I., California; J. J. RIVERS, Am. Nat. xxiii, p. 1100 [1890].

↓ *Cricolepis*, n. n. for *Cricosaura*, Gundl. & Peters, *nec* Wagner; BOULENGER, P. Z. S. 1890, p. 83.

TEIIDÆ.

Cnemidophorus labialis, n. sp., STEJNEGER, P. U. S. Nat. Mus. xii, p. 643, Lower California.

↓ *Echinosaura*, n. g., near *Neusticurus*, D. & B.; BOULENGER, P. Z. S. 1890, p. 82. *E. horrida*, n. sp., *id. t. c.* p. 83, pl. x, fig. 1, Ecuador.

↓ *Ptychoglossus*, n. g., near *Alopoglossus*, Blgr.; *id. t. c.* p. 83. *P. bilineatus*, n. sp., *id. t. c.* p. 84, pl. x, fig. 2, Ecuador.

AMPHISBÆNIDÆ.

Amphisbana ridleyi, n. sp., BOULENGER, J. L. S. xx, p. 481, Fernando Noronha, Brazil.

LACERTIDÆ.

Tachydromus amurensis, Peters, described by BOULENGER, Ann. N. H. (6) v, p. 137.

R. KLEBS, Tag. Deut. Nat. Vers. lxii, p. 270, Biol. Centralbl. x, p. 448, and condensed translation in Ann. N. H. (6) vi, p. 486, refers a Lizard inclosed in amber, obtained in East Prussia, to the American genus *Cnemidophorus* (P). The Recorder, having examined the specimen, is able to state that the Lizard is a true Lacertoid, agreeing best with the African *Nucras*.

SCINCIDÆ.

Mabuia carinata, Schn., figured by BOULENGER, Faun. Ind., Rept. fig. 56.

Lygosoma bicarinatum, MacL. (= *albertisii*, Ptrs. & Doria): notes by DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 93. *L. malayanum*, Doria, p. 170, and *sanctum*, D. & B., p. 171, pl. xiv, fig. 4, redescribed by M. WEBER, Zool. Ergebn. *L. striolatum*, p. 172, pl. xiv, figs. 5 & 6, and *florense*, p. 173, pl. xiv, figs. 2 & 3, n. spp., *id. t. c.*, Flores. *L. tenuiculum* and *whiteheadi*, n. spp., MOCQUARD, Le Nat. xii, p. 144, and N. Arch. Mus. (3) ii, pp. 133 & 134, pl. viii, figs. 2 & 3, North Borneo. *L. maccoeyi*, n. sp., RAMSAY & DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 8, Brawlin, N. S. Wales. *L. striato-fasciatum*, n. sp., DOUGLAS-OGILBY, *t. c.* p. 5, Solomon Is. [= *L. albofasciolatum*, Gthr.—REC.]. *L. atrogulare*, n. sp., *id. t. c.* p. 94, British New Guinea. *L. anomalopus*, n. sp., BOULENGER, P. Z. S. 1890, p. 84, pl. xi, fig. 4, Pinang. *L. devisii*, n. n. for *Heteropus lateralis*, De Vis; *id. t. c.* p. 79.

Emoa pallidiceps and *cuneiceps*, n. spp., DE VIS, P. Linn. Soc. N.S.W. (2) v, pp. 497 & 498, New Guinea.

Homolepida englishi, n. sp., *id. t. c.* p. 499, New Guinea [= *Lygosoma muelleri*, Schleg.—REC.].

Ablepharus boutonii, Desj., n. var. *furcata*; M. WEBER, Zool. Ergebn. p. 174, Flores. *A. boulengeri*, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 10, Brawlin, N. S. Wales.

Miculia orientalis, n. sp., DE VIS, P. R. Soc. Queensl. v [1888], p. 160, Queensland. [Omitted from Zool. Rec. xxv.]

Tropidophorus queenslandia, n. sp., *id.* P. Linn. Soc. N.S.W. (2) iv, p. 1034, Queensland.

Scincus albifasciatus, n. sp., BOULENGER, P. Z. S. 1890, p. 85, pl. xi, fig. 5, Dakar, Senegambia.

RHIPTOGLOSSA.

Chamaeleon damaranus, Blgr., *liocephalus*, Gray, and *simoni*, Boettg.: notes by MATSCHIE, Zool. Jahrb., Syst. v, pp. 608 & 613. *C. roperi*,

- n. sp., BOULENGER, P. Z. S. 1890, p. 85, pl. viii, fig. 4, Kilifi, E. Africa.
O. willsii, n. sp., GÜNTHER, Ann. N. H. (6) v, p. 71, pl. vi, Madagascar.

PYTHONOMORPHA.

- DOLLO, L. Première Note sur les Mosasauriens de Maestricht. Mém. Soc. Belg. Géol. iv, pp. 151-169, pl. viii.

Deals with *Mosasaurus giganteus*, Sömm. (= *M. hoffmanni*, Mant.) and *Plioplatycarpus marshii*, Dollo, and with the phylogeny of Mosasaurians generally. The author is inclined to regard the European Mosasaurians as descended from the American, and these from the New Zealand forms.

- BAUR, G. On the Characters and Systematic Position of the large Sea-Lizards, *Mosasauridae*. Science, xv, p. 262.

The author regards the *Mosasauridae* as very closely related to the *Varanidae*, of which they simply represent highly specialized aquatic forms. They are united with the *Varanidae* and *Helodermatidae* into a group, for which the old name *Platynota* is revived.

OPHIDIA.

BOULENGER, Faun. Ind., Rept., abandoning the primary division of Snakes into poisonous and non-poisonous, arranges the Ophidia in 9 families:—1, *Typhlopidae*; 2, *Glauconiidae*; 3, *Boidae*; 4, *Ilysiidae*; 5, *Uropeltidae*; 6, *Xenopeltidae*; 7, *Colubridae*; 8, *Amblycephalidae*; 9, *Viperidae*. The *Colubridae* are divided into three parallel series: *Aglypha*, *Opisthoglypha*, and *Proteroglypha*.

- JÄGERSKIÖLD, M. L. Notes sur le développement du Corps Pituitaire chez la Couleuvre. Biol. Fören. ii, pp. 92-95, pl. iv.

- SIBLEY, W. K. On the Incubation of Snakes' Eggs. Nature, xliii, pp. 68-70.

F. WERNER, Biol. Centralbl. x, pp. 233-238, remarks on variations in the lepidosis of Snakes of the genera *Tropidonotus*, *Zamenis*, and *Vipera*.

- WERNER, F. Untersuchungen über die Zeichnung der Schlangen. Vienna: 1890, 8vo, 120 pp., 8 pls.

- VIDAL, G. W. A List of the Venomous Snakes of North Kanara; with remarks as to the imperfections of existing records of the distribution of Snakes, and facts and statistics showing the influence of *Echis carinata* on the death-rate of the Bombay Presidency. J. Bomb. N. H. Soc. v, pp. 64-71.

On the food of European harmless Snakes; F. WERNER, Zool. Gart. xxxi, pp. 134-143.

TYPHLOFIDÆ.

Typhlops beddomii, p. 237, Peninsula of India, *leucomelas*, p. 237, Ceylon, *jerdoni*, p. 238, Khasi Hills, and *oatesii*, p. 238, Andaman Is., n. spp., BOULENGER, Faun. Ind., Rept. *T. thurstoni*, n. sp., BÆTTGER, Ber. Senck. Ges. 1890, p. 298, Nilgherries.

Onychocephalus anchietæ, Boc.: note on a specimen from the Transvaal; MATSCHIE, Zool. Jahrb., Syst. v, p. 608.

GLAUCONIIDÆ.

Glauconia, Gray (= *Stenostoma*, Wagl., nec Latr.): a key to the determination of the African species; BOULENGER, Ann. N. H. (6) vi, p. 92. *G. emini*, n. sp., *id. t. c.* p. 91, Lake Victoria Nyanza. *G. blanfordii*, n. sp., *id.* Faun. Ind., Rept. p. 243, fig., Sind.

BOIDÆ.

Python curtus, Hubr. (= *P. breitensteini*, Sldr.), figured, with notes on the synonymy; BOULENGER, P. Z. S. 1889, p. 432, pl. xlv.

Morelia variegata, Gray, described by DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 96.

Charina, Gray: notes on the species of this genus; STEJNEGER, P. U. S. Nat. Mus. xiii, p. 177.

Gongylophis conicus, Schn., figured by BOULENGER, Faun. Ind., Rept. fig. 75.

ILYSIIDÆ.

Anomalochilus, n. g., allied to *Cylindrophis*, but differing in the absence of a mental groove and the number (4) of upper labials; v. LIDTH DE JEUDE, in M. WEBER, Zool. Ergebn. p. 180. *A. weberi*, n. sp., *id. t. c.* p. 181, pl. xv, figs. 1-3, Sumatra.

UROPELTIDÆ.

Silybura ocellata, Bedd., figured by BOULENGER, Faun. Ind., Rept. fig. 82.

Pseudoplectrurus, n. g., for *Silybura canarica*, Bedd.; *id. op. cit.* p. 270.

COLUBRIDÆ.

Aglypha.

Calamaria virgulata, Boie: note by v. LIDTH DE JEUDE, Notes Leyd. Mus. xii, p. 254. *C. sumatrana*, Edeling, redescribed by BOULENGER, P. Z. S. 1890, p. 34. *C. septentrionalis*, n. sp., *id. ibid.*, S. China. *C. vermiformis*, D. & B., n. var. *sumatrana*, v. LIDTH DE JEUDE, Notes Leyd. Mus. xii, p. 18, Deli, Sumatra. *C. bogorensis*, p. 182, pl. xvi, figs. 6 & 7 [= *C. modesta*, D. & B., var.—REC.], and *variabilis*, p. 183, pl. xvi, fig. 8

[= *C. lumbricoidea*, D. & B.—REC.], n. spp., *id.* in M. WEBER, Zool. Ergebn., Java. *C. lateralis*, n. sp., MOCQUARD, Le Nat. xii, p. 154, and N. Arch. Mus. (3) ii, p. 136, pl. viii, fig. 4, Kina Baloo, Borneo.

✓ *Stilosoma*, n. g. Body very slender, cylindrical and rigid; tail short; head rounded on frontal outline, not distinct from body. Rostral prominent, but not curved; no prefrontals, anteorbitals, or loreal. One nasal. Postfrontals and occipitals in contact with labials. Scales smooth. No scale pits. Anal entire. Teeth smooth. Palatal teeth present. *S. extenuata*, n. sp., A. E. BROWN, P. Ac. Philad. 1890, p. 199, Florida.

Trachischium guentheri, n. sp., BOULENGER, Faun. Ind., Rept. p. 285, Sikkim.

Elapoides annulatus, Sauv., = *Lycodon subcinctus*, Boie; *id.* P. Z. S. 1890, p. 34.

Pseudoxyrhopus, Gthr.: this genus is redefined and comprises 5 species: *P. microps*, Gthr., *P. heterurus*, Jan, *P. quinquelineatus*, Gthr., *P. imerinæ*, Gthr. [= *microps*, Blgr.], and *P. punctatus*, Ptrs.; *id.* Ann. N. H. (6) vi, p. 311, figs.

Liophis imerinæ, n. sp., GÜNTHER, Ann. N. H. (6) v, p. 71, Madagascar [= *Coronella microps*, Blgr.—REC.].

✓ *Polyodontophis*, n. n. for *Enicognathus*, D. & B., *nec* G. Gray; BOULENGER, Faun. Ind., Rept. p. 301.

Diadophis bipunctatus, n. sp., v. LIDTH DE JEUDE, in M. WEBER, Zool. Ergebn. p. 184, pl. xvi, fig. 9, Sumatra.

Ablabes periops, Gthr., n. var. *præfrontalis*; MOCQUARD, Le Nat. xii, p. 154, and N. Arch. Mus. (3) ii, p. 137, pl. ix, fig. 1, Kina Baloo, Borneo. [Is a distinct species.—REC.]

Coronella sayi, Holbr.: on its habits in captivity; H. LACHMANN, Zool. Gart. xxxi, p. 74.

Simotes dennysi, Blanf., = *S. catenifer*, Stol., = *S. labuanensis*, Gthr., = *S. trinotatus*, D. & B., = *S. purpurascens*, Schl.; BOULENGER, P. Z. S. 1890, p. 34. *S. purpurascens*, Schl.: note by LIDTH DE JEUDE, Notes Leyd. Mus. xii, p. 255. *S. beddomii*, n. sp., BOULENGER, Faun. Ind., Rept. p. 314, Wynad, S. India.

✓ *Phyllorhynchus*, n. g. [which the Recorder would regard as not separable from *Lytorhynchus*, Ptrs.], for *P. browni*, n. sp., Arizona, and *Phimothyra decurtata*, Cope; STEJNEGER, P. U. S. Nat. Mus. xiii, p. 151, fig.

Zamenis arenarius, n. sp., BOULENGER, Faun. Ind., Rept. p. 329, Sind.

Bascanion flaviventris, Say, p. 697, pl. xlviii, fig. 3, *mentovarius*, D. & B., p. 699, pl. xlv, fig. 6, *oaxaca*, Jan, p. 701, pl. xlviii, fig. 2, *teniatus*, Hall., p. 703, pl. xlv, fig. 5, *flagelliformis*, Catesb., p. 704, pl. xlviii, figs. 4 & 7, and *lateralis*, Hall., p. 706, pl. xlviii, fig. 6, described and figured by BOCOURT, Miss. Sc. Mex., Rept. *B. lineatus*, n. sp., *id. t. c.* p. 700, pl. xlviii, fig. 1, Mexico.

Dromicus fugitivus, Donnd., p. 708, pl. 1, fig. 4, *laureatus*, Gthr., p. 710, pl. xlv, fig. 1, *clavatus*, Ptrs., p. 711, pl. xlv, fig. 2, *ater*, Gosse, p. 713, pl. 1, figs. 1 & 2, and *putnami*, Jan, p. 714, pl. 1, fig. 3, described and

figured by BOCOURT, Miss. Sc. Mex., Rept. *D. baroni*, Blgr., = *Ptyas infrasignatus*, Gthr., = *D. stumpfi*, Bttg.; GÜNTHER, Ann. N. H. (6) v, p. 70.

Coluber hohenackeri, Strauch: notes by BÖTTGER, Ber. Senck. Ges. 1890, p. 294.

Elaphis subradiatus, Schleg.: notes by V. LIDTH DE JEUDE, in M. WEBER, Zool. Ergebn. p. 184.

Drymobius margaritiferus, Schleg., p. 716, pl. xlix, fig. 2, *chloroticus*, Cope, p. 718, pl. l, fig. 7, *bodderti*, p. 720, pl. li, fig. 5, *lævis*, Fisch., p. 722, pl. li, fig. 6, *pulcherrimus*, Cope, p. 725, pl. xlix, fig. 3, *cæruleus*, Fisch., p. 727, pl. li, fig. 4, and *pleii*, D. & B., p. 728, pl. li, fig. 3, described and figured by BOCOURT, t. c. *D. margaritiferus*, n. var. *occidentalis*, p. 718, Guatemala, *D. bodderti*, n. var. *californiensis*, p. 721, pl. li, fig. 1, California, and *D. dorsalis*, n. sp., p. 724, pl. li, fig. 2, Guatemala [= *D. pleii*, var.—REC.], *id. ibid.*

Dendrophidium dendrophis, Schleg., described and figured by BOCOURT, t. c. p. 730, pl. xlix, fig. 4.

Herpetodryas grandisquamis, Ptrs., described and figured; *id. t. c.* p. 732, pl. xliii, fig. 5.

↓ *Dendrelaphis*, n. g., for *Dendrophis caudolineatus*, Gray; BOULENGER, Faun. Ind., Rept. p. 339.

Tropidonotus, Kuhl: on the foods of the European species; J. v. FISCHER, Zool. Anz. xiii, p. 507. *T. sirtalis*, L.: B. SHARP, P. Ac. Philad. 1890, p. 149, describes the shedding of the skin. *T. vibakuri*, Boie: note by BOULENGER, Ann. N. H. (6) v, p. 139. *T. stolatus*, L., figured by BOULENGER, Faun. Ind., Rept. fig. 101. *T. khasiensis*, p. 344, Khasi Hills, *parallelus*, p. 345, Sikkim, Khasi Hills, Upper Burma, and Yunnan, and *sancti-johannis*, p. 350, Cashmere, n. spp., *id. op. cit.* *T. maculatus*, Edcl., n. var. *torquatus*; MOCQUARD, N. Arch. Mus. (3) ii, p. 139, Kina Baloo, Borneo [= *T. chrysargus*, Boie.—REC.]. *T. flavifrons*, Blgr., figured; *id. t. c.* pl. ix, fig. 2.

Eutania nigrolateris, n. sp., A. E. BROWN, P. Ac. Philad. 1889, p. 421, Arizona.

↑ *Pseudoxenodon*, n. g., for *Tropidonotus macrops*, Blyth, and allies; BOULENGER, Faun. Ind., Rept. p. 340.

↑ *Helicopsoides*, n. g., for *H. typicus*, n. sp.; MOCQUARD, Le Nat. xii, p. 154, and N. Arch. Mus. (3) ii, p. 141, pl. ix, fig. 3, Kina Baloo, Borneo.

↑ *Lepidognathus*, n. g. [= *Helicopsoides*, Mocq.]; V. LIDTH DE JEUDE, in M. WEBER, Zool. Ergebn. p. 186. *L. rugosus*, n. sp., *id. t. c.* p. 187, pl. xvi, figs. 1-5, Sumatra.

Chersydrus granulatus, Schn., figured by BOULENGER, Faun. Ind., Rept. fig. 104.

Opisthoglypha.

Psammophis brevirostris, Ptrs.: note by MATSCHIE, Zool. Jahrb., Syst. v, p. 609. *P. longifrons*, n. sp., BOULENGER, Faun. Ind., Rept. p. 366, Cuddapah Hills, S. India.

Dryophis mycterizans, Daud., figured ; *id. t. c.* fig. 108.

Hypsirrhina blanfordii, n. n., for *H. maculata*, Blanf., *nec* D. & B., *id. t. c.* p. 377. *H. hageni*, n. sp., v. LIDTH DE JEUDE, Notes Leyd. Mus. xii, p. 20, pl. i, Deli, Sumatra.

Pseudoferania, n. g., differing from *Ferania* in having the scales in 21 rows, in having an extra shield on the head interposed between the pre-frontals, and in having two pre- and one post-oculars. *P. macleayi*, n. sp., DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) v, p. 51, Herbert River, Queensland.

Neospades, n. g., apparently related to *Fordonia*, Gray, but with a loreal shield and a divided nasal. *N. kentii*, n. sp., DE VIS, P. R. Soc. Queensl. vi [1889], p. 238, Cambridge Gulf, N. W. Australia.

Proteroglypha.

Elaps trilineatus, D. & B.: note by v. LIDTH DE JEUDE, in M. WEBER, Zool. Ergebn. p. 191, pl. xvi, fig. 10. *E. sumatranus*, n. sp., *id. t. c.* p. 190, Sumatra.

Vermicella bertholdi, Jan, described by DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 80.

Brachysoma triste, Gthr., redescribed by *id. t. c.* p. 97.

Hoplocephalus melanurus, Blgr., and *woodfordii*, Blgr., figured by BOULENGER, P. Z. S. 1890, pl. ii, figs. 1 & 2. *H. elapoides*, n. sp., *id. t. c.* p. 30, pl. ii, fig. 3, Florida I., Solomon Is.

Naia tripudians, Merr.: note on specimens from Sumatra ; *id. t. c.* p. 35.

Acanthophis laevis, Macl., redescribed by DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 99.

Hydrus platyrus, L.: on a monstrous specimen with two pairs of nostrils ; BÆTTGER, Ber. Senck. Ges. 1890, p. lxxiv.

Enhydryna valakadien, Boie, figured by BOULENGER, Faun. Ind., Rept. p. 406.

AMBLYCEPHALIDÆ.

Astenodipsas malaccana, Ptrs., figured by v. LIDTH DE JEUDE, in M. WEBER, Zool. Ergebn. pl. xv, figs. 4-6.

VIPERIDÆ.

Vipera berus, L.: A. B. MEYER & F. HELM publish reports on the distribution of the Viper in the kingdom of Saxony, as appendices to Jahresbericht über ornithologischen Beobachtungstationen im Königreich Sachsen, iv, 1889, pp. 148-150, & v, 1890, pp. 72-74. *V. aspis*, L.: on its occurrence in the Black Forest ; J. BLUM, Zool. Gart. xxxi, pp. 12 & 265. *V. russellii*, Shaw, figured by BOULENGER, Faun. Ind., Rept. p. 420. *V. rhinoceros*, Schleg., figured by BÜTTIKOFER, Reisebilder aus Liberia, ii, pl. xxxii. *V. raddei*, n. sp. [*V. xanthina*, Strauch, *nec* Gray], BÆTTGER, Zool. Anz. xiii, p. 62, Armenia.

Echis carinata, Schn., recorded from Togoland, W. Africa ; MATSCHIE, Zool. Jahrb., Syst. v, p. 617.

Trimeresurus purpureomaculatus, Gray, var. *carinatus*, Gray : note on a specimen from Sumatra ; BOULENGER, P. Z. S. 1890, p. 36.

ORNITHOSAURIA.

Rhamphorhynchus jessoni, n. sp., LYDEKKER, Q. J. Geol. Soc. xlv, p. 429, figs., Oxford Clay of Huntingdonshire.

DINOSAURIA.

O. C. MARSH, Am. J. Sci. (3) xxxix, p. 424, arranges the American Cretaceous Dinosaurs in the following orders and families :—

Ord. THEROPODA.

Fam. 1. *Dryptosauridæ*.

Ord. ORNITHOPODA.

Fam. 2. *Trachodontidæ*. Fam. 3. *Claosauridæ*. Fam. 4. *Ornithomimidæ*.

Ord. CERATOPSIA.

Fam. 5. *Ceratopsidæ*.

Fam. 6. *Nodosauridæ*.

Criticisms by BAUR, Am. Nat. xxiv, p. 569.

O. C. MARSH indicates additional special characters of his *Ceratopsidæ* ; Am. J. Sci. (3) xxxix, pp. 83 & 418, pls. v-vii, and Geol. Mag. (3) vii, pp. 1-5, pl. i : and, Am. J. Sci. (3) xxxix, p. 415, fig. 1, writes on the distinctive characters of his order *Hallopoda*.

Iguanodon, Mant. : R. LYDEKKER, Q. J. Geol. Soc. xlv, pp. 36-45, figs., describes various remains from the Wealden of England.

Camptosaurus dispar, Marsh : note on the ilium ; S. W. WILLISTON, Am. Nat. xxiv, p. 472.

Hadrosaurus breviceps, Marsh : note on the teeth ; MARSH, Am. J. Sci. (3) xxxix, p. 423, fig. COPE, Am. Nat. xxiii, p. 905, suggests the possibility of its identity with *Diclonius pentagonus*, Cope.

✓ *Claosaurus*, n. g., for *Hadrosaurus agilis*, Marsh ; MARSH, Am. J. Sci. (3) xxxix, p. 423, fig.

Hadrosaurus paucidens, Marsh, belongs probably to *Ceratops* ; *id. t. c.* p. 83.

✓ *Trachodon longiceps*, n. sp., *id. t. c.* p. 422, Laramie formation, Wyoming. *Pteropelyx*, n. g., for *P. gracilipes*, n. sp., displaying characters between the *Hadrosauridæ* and *Agathaumidæ* ; COPE, Am. Nat. xxiii, p. 904 [issued March, 1890], Cow I., Montana.

✓ *Ornithomimus*, n. g., type of a new family, *Ornithomimidæ*, of *Ornithopoda*. *O. velox*, n. sp., MARSH, Am. J. Sci. (3) xxxix, p. 84, pl. i, Ceratops beds of Colorado.

Megalosaurus dunkeri, Dames : on a metatarsus from the Wadhurst Clay, near Hastings ; LYDEKKER, Q. J. Geol. Soc. xlv, p. 45, fig.

✓ *Barosaurus*, n. g., for caudal vertebræ resembling those of *Diplodocus*, 1890. [VOL. XXVII.]

but without anterior projection to the chevrons. *B. lentus*, n. sp., MARSH, Am. J. Sci. (3) xxxix, p. 85, fig., Atlantosaurus beds of Dakota.

Pleurocoelus valdensis, Lyd. : remarks by LYDEKKER, Q. J. Geol. Soc. xlv, p. 182, fig., pl. ix.

Polygonax, Cope [= *Triceratops*, Marsh], and *Monoclonius*, Cope [= *Ceratops*, Marsh], are referred to the *Agathaumidae*, *Monoclonius* showing a post-pubis; COPE, Am. Nat. xxiii, p. 906 [issued March, 1890].

Triceratops serratus, p. 81, *prorsus*, p. 82, and *sulcatus*, p. 422, n. spp., MARSH, Am. J. Sci. (3) xxxix, Laramie formation, Wyoming.

R. LYDEKKER, Q. J. Geol. Soc. xlv, p. 185, fig., describes a peculiar horn-like Dinosaurian bone from the Wealden of the Isle of Wight.

EMYDOSAURIA.

HERRICK, C. L. Notes upon the Brain of the Alligator. J. Cincinn. Soc. xii, pp. 129-162, pls. vii-xv.

KILLIAN, G. Die Ohrmuskeln des Krokodiles nebst vorläufigen Bemerkungen über die Homologie des Musculus stapedius und des Stapes. Jen. Z. Nat. xxiv, pp. 632-656, pl. xxxv.

Crocodilus niloticus, Laur. : biological notes by EMIN PASHA & F. STUHLMANN, Zool. Jahrb., Syst. v, p. 546. Notes on the oviposition; A. VOETZKOW, Zool. Anz. xiii, p. 190.

H. N. RIDLEY, Nature, xlii, p. 457, reports the occurrence of a Crocodile [no doubt *Crocodilus porosus*] on Cocos I., Malay Archipelago; and A. L. CALDWELL, t. c. p. 463, records the fact of a living Crocodile [probably not an Alligator, as stated] being washed on shore in Barbadoes, in 1885.

Tomistoma schlegelii, S. Müll., recorded from Sumatra, by M. WEBER, Zool. Ergebn. p. 176.

Crocodilus calaritanus, Gennari (foss.), belongs to the genus *Tomistoma*; CAPELLINI, Atti Acc. Pontif. Lincei, Rend. vi, p. 149.

Thoracosaurus neocassariensis, Dekay (foss.): A. S. WOODWARD, Geol. Mag. (3) vii, p. 393, remarks that the type skull really possesses antorbital vacuities.

B. LUNDGREN, JB. Mineral. 1890, ii, p. 275, records the discovery of a Gavial-like, procoelous Crocodilian in the Senonian of Annetorp in Sweden.

♂ *Suchodus*, n. g., allied to *Metriorhynchus*; *S. durobrivensis*, n. sp. (foss.), for a mandible from the Oxford Clay of Peterborough; LYDEKKER, Q. J. Geol. Soc. xlv, p. 284, fig.

Crocodylemus jourdani, n. sp. (foss.), *id.* Cat. iv, p. 234, Kimeridgian, France.

CHELONIA.

STRAUCH, A. Bemerkungen über die Schildkrötensammlung im zoologischen Museum der kaiserlichen Akademie der Wissenschaften zu St. Petersburg. Mém. Ac. Pétersb. (7) xxxviii, No. 2, 127 pp., 4 pls.

An enumeration of all the specimens of Chelonians in the St. Peters-

burg Museum, with critical notes and descriptions of new or imperfectly known species. The classification of Chelonians is discussed, the following arrangement being proposed :—

Subord. I. THECOPHORA.

Fam. 1, *Testudinida* (with two tribes, *Chersemys* and *Chelyda*) ; 2, *Trionychida* ; 3, *Carettochelyda* ; 4, *Cheloniida*.

Subord. II. ATHECA.

Fam. 5, *Sphargida*.

SMETS, G. Les Classifications des Chéloniens. Ann. Soc. Brux. xiii, pp. 101–107.

A review of the classifications hitherto proposed. The review concludes by suggesting the following arrangement, which is but a slight modification of the Recorder's :—

I. ATHECA.

II. TRIONYCIDA.

III. CRYPTODIRA

{ *Chelonoidea*.
Chelydroida.
Emydoida.
Testudinida.

IV. PLEURODIRA.

G. BAUR, Am. Nat. xxiv, pp. 530–535, writes on the classification of the Chelonians, which he divides into four suborders, viz. : *Amphichelydia*, *Pleurodira*, *Cryptodira*, *Chilotæ* [= *Trionychia*].

FICALBI, E. Osservazioni sulla istologia della pelle dei Rettili Cheloniani. Atti Acc. Fisiocr. Siena (4) i, 1889, pp. 39–88, pl. ii.

HAYCRAFT, J. B. Terminations of Nerves in the Nuclei of the Epithelial Cells of Tortoise-shell. Q. J. Micr. Sci. xxxi, pp. 563–569, pl. xliii.

MITSUKURI, K. On the Foetal Membranes of Chelonia. Preliminary Communication. Anat. Anz. v, pp. 510–519.

Researches based on *Clemmys japonica*, Gray, and *Trionyx sinensis*, Wiegman.

MEHNERT, E. Untersuchungen über die Entwicklung des Beckengürtels der *Emys lutaria taurica*. Morph. JB. xvi, pp. 537–571, pl. xx.

TRIONYCHOIDEA.

Trionyx hurum, Gray, figured by BOULENGER, Faun. Ind., Rept. fig. 5, *T. phayrii*, Theob., recorded from Sumatra, *id.*, P. Z. S. 1890, p. 33, and from Java by M. WEBER, Zool. Ergebn. p. 176. *T. vertebralis*, n. sp. STRAUCH, Mém. Ac. Pétersb. (7) xxxviii, No. 2, p. 113, pl. iii, figs. 3 & 4, Gaboon.

Pelochelys poliakovii, n. sp., *id.* t. c. p. 118, pl. iv, figs. 1–3, Foo Choo China [= *P. cantoris*, Gray.—REC.].

PLEURODIRA.

G. BAUR, Am. Nat. xxiv, p. 483, diagnoses the genera *Podocnemis*, Wagl., *Peltocephalus*, D. & B., and *Erymnochelys*, Baur.

Sternothærus, Bell: note on some young specimens from the Lower Congo; VAILLANT, Bull. Soc. Philom. (8) ii, p. 171.

Podocnemis madagascariensis, Grand., figured by STRAUCH, Mém. Ac. Pétersb. (7) xxxviii, No. 2, pls. i, figs. 1-3, & iii, fig. 1. *P. tracaza*, Spix: skull figured; *id. t. c.* pls. ii, figs. 1-4, & iii, fig. 2.

Hydraspis, Bell, and *Rhinemys*, Wagl.: remarks by BAUR, Am. Nat. xxiv, p. 484.

Chelys boulengeri, n. sp., *id. t. c.* p. 968 [= *C. fimbriata*, Schn.—REC.].

Chelodina rugosa, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 66, pl. vii, Cape York [= *C. oblonga*, Gray.—REC.].

Carettochelys, Rams.: G. BAUR, Am. Nat. xxiii, p. 1017 [1890], expresses his doubts as to the correctness of placing this genus among the *Pleurodira*.

Miolania platyceps, Ow. (foss.): notes on remains from Lord Howe Island, and from the Pliocene Deep Lead at Canadian, near Gulgong, N. S. Wales; R. ETHERIDGE, JUN., Rec. Geol. Surv. N.S.W. i, p. 149, pls. xxv & xxvi.

CRYPTODIRA.

↓ *Glyptops*, n. g., type of a new family, *Glyptopsidæ*, apparently of Cryptodiran affinities, with the entire external surface of the skull elaborately sculptured. *G. ornatus*, n. sp. (foss.), MARSH, Am. Journ. (3) xl, p. 177, pl. vii, fig. 1, Upper Jurassic, Wyoming.

Adocus punctatus, n. sp. (foss.), *id. t. c.* p. 178, pl. vii, fig. 3, Cretaceous of New Jersey.

Malacoclemmys geographica, Les., and *M. lesueurii*, Gray: on the differences between the two species; GARMAN, Bull. Ess. Inst. xxii, p. 70, pl. ii. *M. oculifera*, p. 262, and *kohnii*, p. 263, n. spp., BAUR, Science, xv, Louisiana and Florida.

Dirochelys, Ag., is held to be a valid genus by BAUR, Am. Nat. xxiii, p. 1099 [1890], who regards *Emys blandingii*, Holbr., as its nearest ally.

Cistudo portisii, p. 5, pls. i-v, and *kunzi*, p. 13, pls. vi-ix, n. spp. (foss.), GOLLIEZ & LUGEON, Abh. Schw. pal. Ges. xvi [1889], No. 2, Molasse of Lausanne, Switzerland. [Probably belong to *Ptychogaster*, Pomel.—REC.]

Ptychogaster rotundiformis, n. sp. (foss.), *id. t. c.* p. 18, pls. x-xiii, Molasse of Lausanne, Switzerland.

Homopus, D. & B.: note on the secondary sexual characters; BOULENGER, P. Z. S. 1890, p. 521.

Testudo, L.: G. BAUR, Am. Nat. xxiii, pp. 1039-1057 [1890], writes on the gigantic Tortoises of the Galapagos Islands. *T. elegans*, Schoepff,

figured by BOULENGER, Faun. Ind., Rept. fig. 6. *T. galapagoensis*, n. sp., for *T. elephantopus*, Jackson, *nec* Harl., and *T. guentheri*, n. sp., for *T. elephantopus*, Gthr., *nec* Harl.; BAUR, *t. c.* p. 1044. *T. leberonensis*, n. sp. (foss.), DEPÉRET, C.R. cx, p. 915, Upper Miocene, Mt. Leberon, France. *T. brontops*, n. sp. (foss.), MARSH, Am. Journ. (3) xl, p. 179, pl. viii, Lower Miocene of Dakota.

G. BAUR, Am. Nat. xxiv, p. 486, divides the recent *Cheloniidæ* into four genera, viz., *Chelonia*, Brongn., *Caretta*, Ritg., *Thalassochelys*, Fitz., and *Lepidochelys*, Fitz.

Chelone imbricata, L., figured by BOULENGER, Faun. Ind., Rept. fig. 16.

ICTHYOSAURIA.

Ophthalmosaurus pleydelli, n. sp., LYDEKKER, Cat. iv, p. 268, figs. Kimeridgian, Dorsetshire.

Gavialis mutinensis, n. sp. (foss.), Pantanelli, Boll. Soc. Geol. Ital. viii, p. 43, = *Ichthyosaurus campylodon*, Carter; CAPELLINI, Mem. Ist. Bologna (4) x, p. 1, pls. i & ii, and Atti Acc. Pontif. Lincei, Rend. vi, p. 79.

PLESIOSAURIA.

WILLISTON, S. W. Structure of the Plesiosaurian Skull. Science, xv, pp. 262 & 290.

Pliosaurus ferox, Sauv.: on remains from the Oxford Clay of Peterborough; LYDEKKER, Q. J. Geol. Soc. xvi, p. 49, pl. v.

Cimoliosaurus portlandicus, Ow.: remarks by *id.* *t. c.* p. 47, fig.

Capitosaurus silesiacus, n. sp., KUNISCH, Z. geol. Ges. xlii, p. 377, pl. xx, Muschelkalk of Silesia.

E. KOKEN has notes on the skull, brain-case, and auditory organ of *Nothosaurus*; SB. Nat. Fr. 1890, pp. 108-111.

Anarosaurus, n. g., allied to *Nothosaurus*, H. v. M. *A. pumilio*, n. sp., DAMES, Z. geol. Ges. xlii, p. 74, pl. i, Muschelkalk of Remkersleben, near Magdeburg.

✓*Ditrochosaurus*, n. g., allied to *Mesosaurus*, Gerv., *D. capensis*, n. sp., GÜRICH, Z. geol. Ges. xli, p. 641, pl. xxvii, Karroo formation.

THECODONTIA.

ZITTEL, Palæontologie, iii, p. 644, proposes a new Suborder, *Pseudosuchia*, intermediate between *Parasuchia* and *Eusuchia*, for *Ätiösauros*, Fraas, and allies.

RHYNCHOCEPHALIA.

G. B. HOWES, P. Z. S. 1890, p. 357, figs., remarks on the proatlas and vomerine teeth of *Sphenodon punctatus*, Gray.

THOMAS, A. P. W. Preliminary Note on the Development of the Tuatera (*Sphenodon punctatum*). P. R. Soc. xlviii, pp. 152-156.

Champsosaurus, Cope : recorded from the Lower Eocene of Orp-le-Grand, Belgium, by DOLLO, Bull. Soc. Belg. Géol. iv, p. 55.

Kadaliosaurus priscus, Credn. (foss.) : remarks by G. BAUR, Am. J. Sci. (3) xxxix, p. 156.

ANOMODONTIA.

R. LYDEKKER, P. Z. S. 1889, p. 572, pls. liv & lv, describes and figures some associated remains of a Theriodont from the Karroo System of the Cape.

Ptychosiagum, n. n. for *Ptychognathus*, Ow. nec Stimps. ; *id.* Cat. iv, p. 33.

BATRACHIA.

P. & F. SARASIN, summing up the results of their investigation of *Ichthyophis* [*infra*, p. 27], propose the following classification of the Batrachians :—

Subclass I. STEGOCEPHALI s. ARCHÆOBATRACHI.

Subclass II. NEOBATRACHI.

Order I. URODELA.

Suborder 1. SALAMANDROIDEA (*Ichthyodæ*, *Salamandridæ*).

Suborder 2. CÆCILOIDEA (*Amphiumidæ*, *Cæciliidæ*).

Order II. ANURA.

BOULENGER, G. A. Second Report on Additions to the Batrachian Collection in the Natural History Museum. P. Z. S. 1890, pp. 323-328, pls. xxv & xxvi.

It is stated that as many as 1119 apparently valid species of Batrachians are known, viz. : 960 *Ecaudata*, 122 *Caudata*, and 37 *Apoda*. The British Museum possesses examples of 660 species of *Ecaudata* (6900 specimens), 85 species of *Caudata* (1340 specimens), and 29 of *Apoda* (156 specimens). A list of 80 species added since 1886 is given, and several new species are described.

HOWES, G. B. On the Intestinal Canal of the Ichthyopsida, with especial reference to its Arterial Supply and the Appendix Digitiformis. J. L. S. xxiii, pp. 381-410, pls. i & ii.

STRONG, O. The Structure and Homologies of the Cranial Nerves of the Amphibia, as determined by their Peripheral Distribution and Internal Origin. Zool. Anz. xiii, pp. 598-607.

SMIRNOW, A. Die Struktur der Nervenzellen im Sympatheticus der Amphibien. Arch. mikr. Anat. xxxv, pp. 407-422, pls. xxiv & xxv.

AUERBACH, L. Ueber die Blutkörperchen der Batrachier. Anat. Anz. v, pp. 570-578.

WERNER, F. Ueber die Veränderung der Hautfarbe bei europäischen Batrachiern. Verh. z.-b. Wien, xl, pp. 169-176.

G. B. HOWES, Zool. xiv, p. 281, remarks on the toxic properties of the Batrachian integument.

ROSSI, U. Contributo alla maturazione delle uova degli Anfi. Comunicazione preliminare. Anat. Anz. v, pp. 142 & 143.

MORGAN, T. H. On the Amphibian Blastopore. Stud. Biol. Lab. J. Hopkins Univ. iv, pp. 355-377, pls. xl-xlii.

WIEDERSHEIM, R. Weitere Mittheilungen über die Entwicklungsgeschichte des Schulter- und Beckengürtels. Amphibien. Anat. Anz. v, pp. 19-26, figs.

SCHÖEDEL, E. Zur postembryonalen Entwicklung des Auges der Amphibien. Zool. Jahrb., Anat. iv, pp. 297-347, pls. xix-xxi.

SCHWINK, F. Ueber die Entwicklung des Herzendothels der Amphibien. Anat. Anz. v, pp. 207-213.

MAURER, F. Die erste Anlage der Milz und das erste Auftreten von lymphatischen Zellen bei Amphibien. Morph. JB. xvi, pp. 203-208, figs.

MOLLIER, S. Ueber die Entstehung des Vornierensystems bei Amphibien. Arch. Anat. Phys. 1890, An. pp. 209-235, pls. xi & xii.

ECAUDATA.

EMERY, C. Zur Morphologie des Hand- und Fuss-skeletts. Vorfällige Mittheilung. i. Carpus und Präpollex der Anuren. Anat. Anz. v, pp. 283-288, figs.; also Atti Acc. Pontif. Lincei, Rend. vi, pp. 229-233, figs.

The author is inclined to believe that the rudimentary digit of the Frog which is commonly called the pollex represents the præpollex, and the outer finger represents the fourth and not the fifth digit.

COGGI, A. Ueber die sog. Kalksäckchen an den Spinalganglien des Frosches und ihre Beziehungen zum Ductus endolymphaticus. Vorläufige Mittheilung. Anat. Anz. v, pp. 177 & 178.

GAULE, J. Zahl und Vertheilung der markhaltigen Fasern im Froschrückenmark. Abh. Sächs. Ges. xv, pp. 737-780, 10 pls.

RANVIER, L. Des éléments musculaires et des éléments élastiques de la membrane rétrolinguale de la Grenouille. C.R. cx, pp. 504-508.

—. De la membrane du sac lymphatique œsophagien de la Grenouille. Op. cit. cxi, pp. 863-865.

SMITH, W. R. A case of Hermaphroditism in a Common Frog (*Rana temporaria*). J. Anat. Phys. xxiv, pp. 218 & 219, figs.

DUTARTRE, A. Sur les changements de couleur chez la Grenouille commune (*Rana esculenta*). C.R. cxi, pp. 610 & 611.

- LATTER, O. H. Abnormal Reproductive Organs in *Rana temporaria*. J. Anat. Phys. xxiv, pp. 369-372, pl. xvi.
- PLOETZ, A. J. Die Vorgänge in den Froschhoden unter dem Einfluss der Jahrzeit. Vergleich von *Rana temporaria* und *esculenta*. Arch. Anat. Phys. 1890, Phys., Suppl. pp. 1-32, pls. i & ii.
- On the mode of embrace in the pairing tailless Batrachians; HÉRON ROYER, Bull. Soc. Z. Fr. xv, p. 209.
- SHURAWLEW, G. S. Ueberwintern der Frösche. Korr. Nat. Ver. Riga, xxxiii, pp. 38 & 39.
- Translated from the Russian Journ. Soc. Friends N. H., Moscow, 1890.
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RANIDÆ.

Rana temporaria, L., *arvalis*, Nilss., and *agilis*, Thom.: on their occurrence in Hungary and Transylvania; L. v. MÉHELY, Zool. Anz. xiii, pp. 445 & 611. *R. temporaria*, L.: remarks on alpine larvæ by E. v.

MARTENS, SB. nat. Fr. 1890, p. 155. *R. agilis*, Thom., recorded from Linz on the Rhine, by MELSHEIMER, Verh. Ver. Rheinl. (5) vii, p. 82, and from Prague, Bohemia, by WOLTERSTORFF, Zool. Anz. xiii, p. 260. *R. amurensis*, Blgr., redescribed and figured by BOULENGER, Ann. N. H. (6) v, p. 140, pl. ix, fig. 1. *R. tigrina*, Daud., figured; *id.*, Faun. Ind., Rept. p. 449. *R. whiteheadi*, Blgr., figured by MOCQUARD, N. Arch. Mus. (3) ii, pl. x, fig. 2. *R. decorata*, pp. 155, 145, pl. x, fig. 1 [= *R. luctuosa*, Ptrs.—REC.], *obsoleta*, pp. 155, 147 [= *R. signata*, Gthr.—REC.], and *paradoxa*, pp. 155, 148, pl. x, fig. 3 [= *R. kuhlii*, D. & B.—REC.], n. spp., *id.* Le Nat. xii, and N. Arch. Mus. (3) ii, Kina Baloo, Borneo.

Rhacophorus acutirostris, n. sp., *id.* Le Nat. xii, p. 163, and N. Arch. Mus. (3) ii, p. 151, pl. xi, fig. 1, Kina Baloo, Borneo. *R. colletti*, n. sp., BOULENGER, P. Z. S. 1890, p. 36, Sumatra.

Ixalus latopalmatus, Blgr., figured by MOCQUARD, N. Arch. Mus. (3) ii, pl. xi, fig. 2. *I. nubilus*, n. sp., *id.* Le Nat. xii, p. 163, and N. Arch. Mus. (3) ii, pl. xi, fig. 3, Palawan [= *Rana natatrix*, Gthr.—REC.].

ENGYSTOMATIDÆ.

Phrynella pollicaris, n. sp., BOULENGER, P. Z. S. 1890, p. 37, Perak.

Microhyla inornata, n. sp., *id.* *ibid.*, Sumatra.

Cacopus systoma, Schn., figured; *id.*, Faun. Ind., Rept. p. 496.

GENYOPHRYNIDÆ.

† *Genyophryne*, n. g., type of a new family of *Firmisternia*, characterized by absence of maxillary teeth and presence of mandibular teeth; BOULENGER, P. Z. S. 1890, p. 326. *G. thomsoni*, n. sp., *id.* t. c. p. 327, pl. xxv, fig. 1, Sudest I., New Guinea.

CYSTIGNATHIDÆ.

Ceratophrys calcarata, n. sp., BOULENGER, P. Z. S. 1890, p. 327, pl. xxvi, Colombia.

Paludicola fischeri, n. sp., *id.* t. c. p. 327, pl. xxv, fig. 2, Venezuela.

† *Phanerotis*, n. g., near *Cryptotis*, Gthr., but ear distinct and vomerine teeth as in *Limnodynastes*; *id.*, P. Linn. Soc. N.S.W. (2) v, p. 593. *P. fletcheri*, *id.* t. c. p. 593, N. S. Wales.

† *Mitrolysis*, n. g., for *Chiroleptes alboguttatus*, Gthr.; COPE, Batr. N. Am. p. 312 [1889].

BUFONIDÆ.

MARIACHER, G. La riproduzione del *Bufo viridis*. Riv. Ital. Sci. Nat. ix, 1889, pp. 29–31.

Bufo vulgaris, Laur.: note by BOULENGER, Ann. N. H. (6) v, p. 141. *B. melanostictus*, Schn., figured; *id.*, Faun. Ind., Rept. p. 506. *B. lentiginosus woodhousii*, Gir.: notes by STEJNEGER, N. Am. Faun. No. 3, p. 116,

and by COPE, Am. Nat. xxiv, p. 1204. *B. jerboa*, n. sp., BOULENGER, P. Z. S. 1890, p. 328, pl. xxv, fig. 3, Borneo. *B. fuliginous*, pp. 163, 158, pl. xi, fig. 5, and *spinulifer*, pp. 181, 160, pl. xi, fig. 6, n. spp., MOCQUARD, Le Nat. xii, and N. Arch. Mus. (3) ii, North Borneo. *B. panayanus*, n. sp., SEOANE, Mém. Soc. Zool. iii, p. 206, pl. vi, erroneously stated to be from the Philippines [= *B. gutturosus*, Daud.—REC.].

Nectophryne misera, pp. 182, 161, pl. xi, fig. 7, and *maculata*, pp. 182, 162, pl. xi, fig. 8, n. spp., MOCQUARD, Le Nat. xii, and N. Arch. Mus. (3) ii, North Borneo.

HYLIDÆ.

Hyla versicolor, Daud. : notes on the habits ; HÉRON ROYER, Bull. Soc. Z. Fr. xv, p. 205. *H. arenicolor*, Cope : note by STEJNEGER, N. Am. Faun. No. 3, p. 117. *H. stephensi*, Blgr. : note by BOULENGER, Ann. N. H. (6) v, p. 142. *H. macgregori*, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 100, British New Guinea.

PELOBATIDÆ.

Pelobates fuscus, Laur. : on very large tadpoles from Berlin ; WELTNER, SB. Nat. Fr. 1890, p. 113.

Pelodytes punctatus, Daud., recorded from Wimereux, Pas de Calais, by GIARD, Bull. Sci. Fr. Belg. xxii, p. 87.

DISCOGLOSSIDÆ.

Discoglossus pictus, Otth. HÉRON ROYER writes on the habits and development, and on the characters which, according to him, differentiate *D. pictus* and *D. auritus*, HÉRON ROYER ; Bull. Soc. Angers (2) xix, p. 45, pls. i & ii. On its acclimatisation in France (Touraine) ; *id.*, Bull. Soc. Zool. Fr. xv, p. 14.

Bombinator orientalis, n. sp., BOULENGER, Ann. N. H. (6) v, p. 143, pl. ix, fig., N. China, Corea, and Amoorland.

Alytes obstetricans, Laur. : biological notes by MELSHEIMER, Verh. Ver. Rheinl. (5) vi, p. 58.

DACTYLETHRIDÆ.

Xenopus laevis, Daud. : notes on the habits and oviposition ; J. M. LESLIE, P. Z. S. 1890, p. 69.

CAUDATA.

HEIDENHAIN, M. Beiträge zur Kenntniss der Topographie und Histologie der Kloake und ihrer drüsigen Adnexa bei den einheimischen Tritonen. Arch. mikr. Anat. xxxv, pp. 173-274, pls. x-xiii.

ROSSI, U., & VICARELLI, G. Sulla struttura degli ovidotti dello *Spelerpes fuscus* e della *Salamandrina perspicillata*. Monit. Zool. Ital. i, pp. 222-225.

- VAILLANT, L. Note sur la structure des téguments chez quelques Urodèles (*Molge vulgaris* et *Molge palmata*). Bull. Soc. Philom. (8) ii, pp. 137 & 138.
- PHISALIX, C. Sur quelques points de la physiologie des glandes cutanées de la Salamandre terrestre. CR. Soc. Biol. (9) ii, pp. 225-227.
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- *ROSSI, U. Il nucleo nelle uova dello *Spelerpes fuscus* o *Geotriton fuscus*. Prima nota. Giorn. medico lo Sperimentale (Florence), 1890. Abstract, Monit. Zool. Ital. i, p. 108.
- WIEDERSHEIM, R. Beiträge zur Entwicklungsgeschichte von *Salamandra atra*. Arch. mikr. Anat. xxxvi, pp. 469-482, pl. xix.
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- Molge alpestris*, Laur., figured by DÜRIGEN, *op. cit.* pl. v, figs. 6 & 7. *M. strauchii*, Stdr., = *Neurergus crocatus*, Cope; BOULENGER, P. Z. S. 1890, p. 32.
- Tylototriton verrucosus*, And., figured; *id.* Faun. Ind., Rept. p. 514.
- Gyrinophilus maculicaudus*, n. sp., COPE, Am. Nat. xxiv, p. 966, fig., Indiana.

APODA.

- SARASIN, P. & F. Ergebnisse naturwissenschaftlicher Forschungen auf Ceylon in den Jahren 1884-86. II. Heft 4. Zur Entwicklungsgeschichte und Anatomie der ceylonischen Blindwühle, *Ichthyophis glutinosus*. Wiesbaden: 1890, 4to, pp. 153-263, pls. xv-xxiv.
- This part, which deals with the anatomy, the classification, and concludes with a complete index to the literature on the *Apoda*, completes the work. [Cf. Zool. Rec. Rept. xxiv, p. 33, and xxvi, p. 23.]

STEGOCEPHALA.

AMMON, L. VON. Die permischen Amphibien der Rheinpfalz. Munich : 1889, 4to, 119 pp., 5 pls.

This work is prefaced by a bibliographical list of all the contributions to the knowledge of the *Stegocephala*.

CREDNER, H. Die Stegocephalen und Saurier aus dem Rothliegenden des Plauen'schen Grundes bei Dresden. IX. Theil. Z. geol. Ges. xlii, pp. 240-277, pls. ix-xi.

Deals with *Hylonomus*, Dawson, *Petrobates*, Credn., and *Discosaurus*, Credn.

M. LONEST, Bull. Soc. Belg. Géol. 1888, p. cxx, records the discovery of Stegacephalous remains in the Upper Devonian near Modave, Belgium.

Mastodonsaurus indicus, n. sp., LYDEKKER, Cat. iv, p. 145, Gondwanas, India.

✓*Metoposaurus*, n. n. for *Metopias*, H. v. Mey. nec Gory ; *id. t. c. p.* 152.

✓*Orthopleurosaurus*, n. n. for *Orthocosta*, Fritsch ; *id. t. c. p.* 203.

Dawsonia multidentis, n. n. for *D. polydens*, Fritsch ; *id. t. c. p.* 213.

Branchiosaurus caducus, n. sp., v. AMMON, *t. c. p.* 81, pl. iv, fig. 1, & pl. v, figs. 9 & 10, Permian of Pfarrwald, near Heimkirchen.

Macromerium gümbeli, n. sp., v. AMMON, *t. c. p.* 94, pl. iv, fig. 2, Permian of Wolfstein.

M. scoticum, n. sp., LYDEKKER, Q. J. Geol. Soc. xlii, p. 289, pl. xii, fig. 1, Lower Carboniferous of Gilmerton, near Edinburgh.

Eryops oweni, n. sp., *id. t. c. p.* 291, pl. xii, figs. 2-4. Name changed to *E. africanus*, *id. Cat. iv*, p. 193, S. Africa.

Loxomma allmanni, Huxley : on a series of vertebræ from the Northumberland Coal-field ; D. EMBLETON, Rep. Brit. Ass. lix, p. 580.

✓*Platyoposaurus*, n. n. for *Platyops*, Twelvetr., nec Newp. ; LYDEKKER, Cat. iv, p. 182.

PISCES.

BY

G. A. BOULENGER.

GENERAL.*

COPE, E. D. Synopsis of the Families of Vertebrata. Am. Nat. xxiii, pp. 849-877. [Issued March, 1890.]

Fishes are arranged in the following manner:—

Superclass I. CEPHALOCHORDA.

Class I. ACRANIA. Ord. LEPTOCARDII. Fam. *Branchiostomidae*.

Superclass II. CRANIATA.

Class I. AGNATHA.

Subclass I. OSTRACODERMI.

Order i. ARRHINA. Fams. *Pteraspidae*, *Cephalaspidae*.

Order ii. DIPLORRHINA. Fam. *Mycteropidae*.

Subclass II. MARSIPOBRANCHII.

Order i. HYPEROTRETI. Fams. *Myxiniidae*, *Bdellostomidae*.

Order ii. HYPEROARTI. Fam. *Petromyzontidae*.

Class II. PISCES.

Subclass I. HOLOCEPHALI. Ord. CHIMÆROIDEI. Fam. *Chimæridæ*.

Subclass II. DIPNOI. Ord. SIRENOIDEI. Fams. *Dipteridae*, *Ceratodontidae*, *Lepidosirenidae*.

Subclass III. ELASMOBRANCHII.

Order i. ICHTHYOTOMI. Fams. *Xenacanthidae*, *Cladodontidae*.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the journal or work referred to.

Order ii. SELACHII. Fams. *Psammodontidæ*, *Petalodontidæ*, *Cochliodontidæ*, *Cestraciontidæ*, *Spinacidæ*, *Notidanidæ*, *Lamnidæ*, *Carchariidæ*, *Squatinidæ*, *Rhinobatidæ*, *Pristiophoridæ*, *Pristidæ*, *Squatinoraiidæ*, *Raiidæ*, *Trygonidæ*, *Myliobatidæ*.

Subclass iv. TELEOSTOMI.

Superorder 1. RHIPIDOPTERYGIA.

Order i. RHIPIDISTIA. Fam. *Tristichopteridæ*.

Order ii. ACTINISTIA. Fam. *Celacanthidæ*.

Superorder 2. CROSSOPTERYGIA.

Order i. PLACODERMI. Fams. *Coccosteidæ*, *Dinichthyidæ*.

Order ii. HAPLISTIA. Fam. *Phaneropleuridæ*.

Order iii. TAXISTIA. Fams. *Holoptychiidæ*, *Osteolepididæ*.

Order iv. CLADISTIA. Fam. *Polypteridæ*.

Superorder 3. PODOPTERYGIA. Ord. CHONDROSTEI.
Fams. *Polyodontidæ*, *Acipenseridæ*, *Chondrosteidæ*.

Superorder 4. ACTINOPTERYGIA.

Tribe i. PHYSOSTOMI.

Order i. LYSOPTERI. Fam. *Palæoniscidæ*.

e/ Order ii. ~~M~~IROSPONDYLI. Fams. *Sauropsidæ*, *Pygodontidæ*, *Stylodontidæ*, *Sphærodontidæ*, *Macrosemiidæ*.

Order iii. HALECOMORPHI. Fam. *Amiidæ*.

Order iv. GYNGLYMODI. Fam. *Lepidosteidæ*.

Order v. ISOSPONDYLI. Fams. *Dapedidæ*, *Lepidotidæ*, *Aspidorhynchidæ*, *Saurodontidæ*, *Osteoglossidæ*, *Heterotidæ*, *Galaxiidæ*, *Clupeidæ*, *Chirocentridæ*, *Salmonidæ*, *Thymallidæ*, *Alepocephalidæ*, *Gonorhynchidæ*, *Sauridæ*, *Lutodiridæ*, *Aulopidæ*, *Elopidae*, *Albulidæ*, *Ilyodontidæ*, *Notopteridæ*.

Order vi. ACTINOCHIRI. Fam. *Pelecopteridæ*.

Order vii. PLECTOSPONDYLI. Fams. *Characinidæ*, *Sternopygidæ*, *Cobitidæ*, *Cyprinidæ*, *Catostomidæ*.

Order viii. SCYPHOPHORI. Fams. *Mormyridæ*, *Gymnarichidæ*.

Order ix. NEMATOGNATHI. Fams. *Siluridæ*, *Hypophthalmidæ*, *Aspredinidæ*.

Order x. HAPLOMI. Fams. *Esocidæ*, *Stratodontidæ*, *Umbridæ*, *Cyprinodontidæ*, *Amblyopsidæ*.

Order xi. GLANENCHELI. Fam. *Gymnotidæ*.

Order xii. ICHTHYOCEPHALI. Fam. *Monopteridæ*.

- Order xiii. HOLOSTOMI. Fam. *Symbranchidæ*.
 Order xiv. ENCHELYCEPHALI. Fams. *Nemichthyidæ*,
Anguillidæ, *Congridæ*.
 Order xv. COLOCEPHALI. Fam. *Murænidæ*.
 Order xvi. LYOMERI. Fams. *Saccopharyngidæ*, *Eurypharyngidæ*.
 Tribe ii. PHYSOCLYSTI.
 Order xvii. DOCOPTERI. Fam. *Dorypteridæ*.
 Order xviii. OPISTHOMI. Fams. *Mastacembelidæ*, *Notacanthidæ*.
 Order xix. PERCESOCES. Fams. *Opheocephalidæ*, *Mugilidæ*, *Atherinidæ*, *Sphyrænidæ*, *Scombre-socidæ*.
 Order xx. HEMIBRANCHII. Fams. *Pegasidæ*, *Gasterosteidæ*, *Fistulariidæ*, *Centriscidæ*, *Amphisilidæ*, *Dercetidæ*.
 Order xxi. LOPHOBRANCHII. Fams. *Solenostomidæ*, *Syngnathidæ*, *Hippocampidæ*.
 Order xxii. DISCOCEPHALI. Fam. *Echeneididæ*.
 Order xxiii. PEDICULATI. Fams. *Antennariidæ*, *Lophiidæ*.
 Order xxiv. HETEROSOMATA. Fam. *Pleuronectidæ*.
 Order xxv. PLECTOGNATHI. Fams. *Triacanthidæ*, *Balistidæ*, *Tetrodontidæ*, *Diodontidæ*, *Ostraciidæ*.
 Order xxvi. PERCOMORPHI. Fams. *Ophidiidæ*, *Gadidæ*, *Macruridæ*, *Batrachidæ*, *Cyclopteridæ*, *Acronuridæ*, *Chaetodontidæ*, *Scorpenidæ*, *Cottidæ*, *Bleenniidæ*, *Gobiidæ*, *Platycephalidæ*, *Rhamphocottidæ*, *Agonidæ*, *Heterognathidæ*, *Gerreidæ*, *Carangidæ*, *Sillaginidæ*, *Pristipomatidæ*, *Sciænidæ*, *Sparidæ*, *Percidæ*, *Berycidæ*, *Scombridæ*, *Trichiuridæ*, *Xyphiidæ*, *Osphromenidæ*, *Anabantidæ*.
 Order xxvii. PHARYNGOGNATHI. Fams. *Embiotocidæ*, *Cichlidæ*, *Labridæ*, *Scaridæ*.
 Order xxviii. CRANIOMI. Fams. *Triglidæ*, *Dactylopteridæ*.

STEINMANN, G., & DÖDERLEIN, L. Elemente der Paläontologie. II. Hälfte. Evertabrata (Schluss) und Vertebrata. Leipzig: 1890, 8vo, pp. 337-848, figs.

Vertebrata by L. DÖDERLEIN. Fishes, pp. 529-587.

BEARD, J. The inter-relationships of the Ichthyopsida: A Contribution to the Morphology of Vertebrates. Anat. Anz. v, pp. 146-159 & 179-188.

Deals with the morphology of the pallial region of the fore-brain, the pronephros, the lung and swim-bladder, and sums up with a discussion of

the relationships of the various groups of fishes to one another. *Amphioxus* being left out, a scheme of the phylogeny of the fishes is given, and the following classification of the *Ichthyopsida* is proposed :—

<i>Ganodichthyidæ</i>	-	$\left\{ \begin{array}{l} \textit{Marsipobranchii.} \\ \textit{Ganoidei.} \\ \textit{Teleostei.} \end{array} \right.$
<i>Selachodichthyidæ</i>	-	$\left\{ \begin{array}{l} \textit{Selachii} \\ \textit{Pneumichthyidæ} \end{array} \right.$
		$\left\{ \begin{array}{l} \textit{Dipnoi.} \\ \textit{Amphibia.} \end{array} \right.$

The development of lungs being the justification for the group *Pneumichthyidæ*.

PATTEN, W. On the origin of Vertebrates from Arachnids. Q. J. Micr. Sci. xxxi, pp. 317-378, figs.

Deals, among other points, with what the author takes to be Arachnid features in *Pterichthys* and allies.

Remarks by A. S. WOODWARD, Ann. N. H. (6) vi, pp. 314-316.

COPE, E. D. The Homologies of the Fins of Fishes. Am. Nat. xxiv, pp. 401-423, figs., pls. xiv-xviii.

SCHNEIDER, A. Studien zur Systematik und zur vergleichenden Anatomie, Entwicklungsgeschichte und Histologie der Wirbelthiere. (Fragment.) Zool. Beitr. ii, pp. 268-270, pls. xxiii-xxvii.

Five plates and their explanation, dealing with Fishes, published after the author's death.

KLAATSCH, H. Zur Morphologie der Fischschuppen und zur Geschichte der Hartsubstanzgewebe. Morph. JB. xvi, pp. 97-202 & 209-258, pls. vi-viii.

On the histological structure of the scales of Fishes, recent and fossil, with views on the phylogenesis of the various types.

HOWES, G. B. On the Intestinal Canal of the Ichthyopsida, with especial reference to its Arterial Supply, and the Appendix Digitiformis. J. L. S. xxiii, pp. 381-410, pls. i & ii.

RÖSE, C. Beiträge zur vergleichenden Anatomie des Herzens der Wirbelthiere. Morph. JB. xvi, pp. 27-96, pls. iv & v.

CHEVREL, R. Sur l'anatomie du Système Nerveux grand sympathique des Elasmobranches et des Poissons osseux. Arch. Z. expér. v bis, No. 5, 196 pp., 3 pls.

LAGUESSE, E. Recherches sur le Développement de la Rate chez les Poissons. J. de l'Anat. Phys. xxvi, pp. 345-406 & 425-495, pls. x-xiii.

LIEBREICH, O. Betrachtungen über die physikalische Eigenschaft der Schwimmblase der Fische. Arch. Anat. Phys. 1890, Phys., Suppl., pp. 142-161.

— Ueber die physikalische Funktion der Schwimmblase bei Fischen. Op. cit. Phys. pp. 360-363.

- EMERY, C. Nochmals über die Leuchtorgane der Fische. *Biol. Centralbl.* x, pp. 285 & 286.
- SEITZ, A. Das Fliegen der Fische. *Zool. Jahrb., Syst.* v, pp. 361-372.
- DAHL, F. Die Bewegung der fliegenden Fische durch die Luft. *T. c.* pp. 679-688.
- GOODE, G. B. The Colour of Fishes. *Science*, xv, pp. 211-213, figs.
- GIRARD, C. Les Poissons vivipares de la Côte Américaine de l'Océan pacifique. *Le Nat.* xii, pp. 24, 25, 39, 61, & 62, figs.
- VAILLANT, L. Les Collections d'herpétologie et d'ichthyologie au Muséum d'histoire naturelle. *Rev. Sci.* xlv, pp. 513-522.
- JORDAN, D. S. On the Fishes described in Müller's supplemental volume to the *Systema Naturæ* of Linnæus. *P. Ac. Philad.* 1890, pp. 48-50.
- F. RICHTERS, *Ber. Senck. Ges.* 1890, pp. 3-36, pls. i-iv, reports on some old manuscripts and figures of Fishes in the possession of the Senckenbergian Society.

FAUNÆ.

EUROPE.

- GÜNTHER, A. A Contribution to our Knowledge of British Pleuronectidæ. *P. Z. S.* 1890, pp. 40-44, pl. iii.
- SCHULZE, ERWIN. Ueber die geographische Verbreitung der Süßwasserfische von Mitteleuropa. *Forsch. deutsch. Land. u. Volksk.* v, pp. 69-84.
- MALARD, A. E. Catalogue des Poissons des Côtes de la Manche dans les environs de Saint-Vaast. *Bull. Soc. Philom.* (8) ii, pp. 60-101.
- HOEK, P. P. C. The Fishes of the Zuiderzee. *Tijdschr. Nederl. Dierk. Ver.* (2) iii, pp. 38-79, pls. i-v.
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6 *Pisces.*

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Trygon thalassia fossilis, n. var. (foss.), JAEKEL, *Z. geol. Ges.* xlii, p. 365, Molasse of Baltringen.

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Hybodus vestitus, n. sp. (foss.), FRITSCH, Faun. Gask. ii, p. 97, pl. lxxiii, fig. 14, Permian of Bohemia.

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† *Goniodus*, n. g. [name preoccupied, Agassiz, 1838], probably Elasmobranch and Cestracient; NEWBERRY, Pal. Fishes N. Am. p. 67. *G. hertzeri*, n. sp. (foss.), *id. t. c.* p. 69, pl. xxvii, figs. 11-15, Huron Shale, Devonian, Ohio.

HOLOCEPHALI.

Rhynchodus greenei, n. sp. (foss.), NEWBERRY, Pal. Fishes N. Am. p. 51, Hydraulic Limestone, Wisconsin.

OSTRACODERMI.

HETEROSTRACI.

Cephalaspis campbelltonensis, Whiteaves: remarks by TRAQUAIR, Geol. Mag. (3) vii, p. 21. *C. whiteavesi*, n. sp., *id. t. c.*, Devonian of Canada.

OSTEOSTRACI.

Cephalaspis laticeps, n. sp., TRAQUAIR, Geol. Mag. (3) vii, p. 16, Devonian of Canada.

ANTIARCHA.

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✓ *Holonema*, n. g., for *Pterichthys rugosus*, Claypole; NEWBERRY, Pal. Fishes N. Am. p. 92.

✓ *Glyptaspis*, n. g. (*Pterichthidarum*); *id. t. c.* p. 157. *G. verrucosus*, p. 158, pl. xiii, figs. 1 & 2, Carboniferous, N. America.

Bothriolepis leidyi, p. 111, pls. xviii, fig. 2, & xx, figs. 1-5, and *minor*, p. 112, pl. xx, figs. 6-8, n. spp., *id. t. c.*, Carboniferous, Pennsylvania.

DIPNOI.

SIRENOIDEI.

Dipterus (Ctenodus) nelsoni, p. 89, figs. 19 & 20, *flabelliformis*, p. 90, fig. 21, *levis*, p. 90, figs. 22 & 23, *minutus*, p. 91, fig. 26, and *radiatus*, p. 119, fig. 33, n. spp. (foss.), NEWBERRY, Pal. Fishes N. Am. pl. xxvii, Carboniferous, Pennsylvania.

Ganorhynchus beecheri, n. sp. (foss.), *id.*, Pal. Fishes N. Am. p. 95, pl. xix, fig. 2, Carboniferous, N. America.

Phaneropleuron, Huxl., belongs to the *Dipnoi*. Note on the dentition of *P. curtum*, Whiteaves; JAEKEL, SB. nat. Fr. 1890, p. 1, fig.

Phaneropleuron curtum, Whiteaves: remarks by TRAQUAIR, Geol. Mag. (3) vii, p. 15.

Uronemus splendens, Traq.: remarks by *id. t. c.* p. 252.

Ctenodus interruptus, Barkas: remarks by *id. t. c.* p. 249, and by A. S. WOODWARD, Rep. Yorks. Phil. Soc. 1889, p. 37, pl. i, fig. 2. *C. wagneri*, n. sp. (foss.), NEWBERRY, Pal. Fishes N. Am. p. 172, pl. xxvii, fig. 30, Carboniferous, Ohio. *C. tardus*, n. sp. (foss.), FRITSCH, Faun. Gask. ii, p. 93, pl. lxxx, b, Permian of Bohemia.

✓ *Hemictenodus*, n. g., for *Ctenodus obliquus*, Hanc. & Att. (foss.); JAEKEL, SB. nat. Fr. 1890, p. 7: remarks by TRAQUAIR, Geol. Mag. (3) vii, p. 251. *H. quinquecostatus*, Traquair: notes; *id. ibid.* *Hemictenodus* = *Sagenodus*, Ow.; TRAQUAIR, P. R. Soc. Edinb. xvii, p. 393.

✓ *Gosfordia*, n. g. (foss.), allied to *Ceratodus*, Ag.; A. S. WOODWARD, Mem. Geol. Surv. N.S.W., Pal. No. 4, p. 4. *G. truncata*, n. sp., *id. t. c.* p. 5, pls. i & ii, figs. 1 & 2, Trias, Gosford, N. S. Wales.

R. BURCKHARDT, SB. nat. Fr. 1890, p. 158, has remarks on *Protopterus annectens*, and denies the caudal respiration.

ARTHRODIRA.

TRAQUAIR, R. H. *Homosteus*, Asmuss, compared with *Coccosteus*, Agassiz. P. Phys. Soc. Edinb. 1888-89, pp. 47-57, pl. iii [1889].

[TRAQUAIR, R. H.] On the Structure of *Coccosteus decipiens*. Ann. N. H. (6) v, pp. 125-136, pl. x, and P. Phys. Soc. Edinb. 1889-90, pp. 211-224, pl. xi.

Coccosteus decipiens, Ag.: remarks by A. v. KÖENEN, Geol. Mag. (3) vii, p. 191; TRAQUAIR, *t. c.* p. 235; and A. v. KÖENEN, JB. Mineral. 1890, ii, p. 198.

Phlyctænius, n. g., for *Coccosteus acadicus*, Whiteaves; TRAQUAIR, Geol. Mag. (3) vii, pp. 20 & 55. The name being preoccupied, is changed to *Phlyctænaspis*; *id. t. c.* p. 144. *P. anglicus*, n. sp., *id. t. c.* p. 58, pl. iii, fig. 3, Devonian of Herefordshire.

Dinichthys precursor, p. 51, pl. xli, *gouldii*, p. 150, pls. ix, fig. 1, & x, figs. i & ii, *corrugatus*, p. 151, pl. vii, fig. 3, *intermedius*, p. 152, pls. x, figs. 1 & 2, xlvii, figs. 1-4, & li & lii, and *curtus*, p. 156, pls. xlviii, fig. 3, & liii, figs. 1-3, n. spp., NEWBERRY, Pal. Fishes N. Am., Carboniferous, Ohio.

Trachosteus, n. g., apparently near *Aspidichthys*; *id. t. c.* p. 166. *T. clarkii*, n. sp., *id. t. c.* p. 167, pl. xlii, figs. 1-8, Carboniferous, Ohio.

Phyllolepis delicatula, n. sp. *id. t. c.* p. 97, pl. xix, fig. 11, Carboniferous, Pennsylvania. *P. undulatus* and *corneti*, n. spp., LOHEST, Ann. Soc. Géol. Belg. xv, p. 157, pls. x & xi, Upper Devonian of Belgium.

GANOIDEI.

CROSSOPTERYGII.

Holoptychius granulatus, p. 100, pl. xx, fig. 9, and *tuberculatus*, p. 101, pl. xix, fig. 14, *hallii*, p. 114, pl. xx, fig. 10, and *radiatus*, p. 115, pl. xx, figs. 12-14, n. spp. (foss.), NEWBERRY, Pal. Fishes N. Am., Carboniferous, N. America. *H. dewalquei*, p. 134, figs., and *inflexus*, p. 141, figs., n. spp. (foss.), LOHEST, Ann. Soc. Géol. Belg. xv, Upper Devonian of Belgium.

Glyptolepis quebecensis, Whiteaves: remarks by TRAQUAIR, Geol. Mag. (3) vii, p. 16. *G. benedeni* and *radians*, n. sp. (foss.), LOHEST, Ann. Soc. Géol. Belg. xv, pp. 150 & 151, pls. ix & x, Upper Devonian of Belgium.

Lamnodus minor, n. sp. (foss.), *id. t. c.* p. 120, pl. vii, fig. 1, Upper Devonian of Belgium.

Sphenophorus, n. g. (foss.), for a clavicle probably indicating a Crossopterygian Ganoid, having affinities with *Holoptychius* and *Onychodus*; NEWBERRY, Pal. Fishes N. Am. p. 91. *S. lilleji*, n. sp., *id. t. c.* p. 92, pl. xx, fig. 15, Carboniferous, Pennsylvania.

Cricodus and *Dendrodus*, Ow.: remarks by TRAUTSCHOLD, Z. geol. Ges. xli, pp. 621-634, pls. xxiii-xxv. The author comes to the conclusion that the genus *Dendrodus* has to be dropped, and that the correct position of *Cricodus* may be in a separate family of Crossopterygians.

Dendrodus traquairi and *briarti*, n. spp. (foss.), LOHEST, Ann. Soc. Géol. Belg. xv, pp. 117 & 118, pl. viii, figs. 2, 3, & 5, Upper Devonian of Belgium.

Cricodus? agassizii, n. sp. (foss.), *id. t. c.* p. 120, pls. viii, fig. 1, & vii, fig. 4, Upper Devonian of Belgium.

Strepsodus minor, n. sp. (foss.), TRAQUAIR, P. R. Soc. Edinb. xvii, p. 393, Lower Carboniferous, Pitcorthy, Scotland.

Eusthenopteron foordii, Whiteaves : remarks by TRAQUAIR, Geol. Mag. (3) vii, p. 17.

Megalichthys lavis, n. sp. (foss.), TRAQUAIR, P. R. Soc. Edinb. xvii, p. 394, Lower Carboniferous, Straiton, Scotland.

Coelacanthus phillipsii, Ag. : remarks by J. W. DAVIS, Geol. Mag. (3) vii, p. 159.

Undina barroviensis, n. sp. (foss.), A. S. WOODWARD, Ann. N. H. (6) v, p. 435, pl. xvi, fig. 3, Lower Lias of Barrow-on-Soar, Leicestershire.

ACTINOPTERYGII.

VIRCHOW, H. Ueber Spritzlochkieme von *Acipenser* und ihre Verbindung mit den Kopfgefäßen. Arch. Anat. Phys. 1890, Phys. pp. 586-588.

† *Mesopoma*, n. g. (foss.), for *Canobius pulchellus*, Traq., *politus*, Traq., and *Rhadinichthys macrocephalus*, Traq. ; TRAQUAIR, Ann. N. H. (6) vi, p. 493.

‡ *Drydenius*, n. g. (foss.), allied to *Gonatodus*, for *D. insignis*, n. sp. ; *id.* P. R. Soc. Edinb. xvii, p. 399, Lower Carboniferous, Loanhead, Scotland.

Rhadinichthys lepturus, Traq., = *R. ornatissimus*, Ag. ; *R. geikiei*, Traq., = *R. carinatus*, Ag. : TRAQUAIR, P. R. Soc. Edinb. xvii, p. 397. *R. macrocephalus*, n. sp., *id. t. c.* p. 398, Lower Carboniferous, Pumpherston, Scotland. *R. delicatulus*, Traq., = *R. geikiei*, Traq. ; TRAQUAIR, Ann. N. H. (6) vi, p. 492.

‡ *Benedenichthys*, n. n. for *Benedenius*, Traq., preoccupied ; *id. t. c.* p. 492.

‡ *Palæoniscinotus*, n. g. (foss.), allied to *Palæoniscus*. *P. czekanowskii* and *P. irkutskensis*, n. spp., ROHON, Mém. Ac. Pétersb. xxxviii, No. 1, p. 8, pls. i & ii, Jurassic of Ust-Balei, E. Siberia.

Elonichthys nemopterus, Ag. : on the well-marked varieties ; TRAQUAIR, P. R. Soc. Edinb. xvii, p. 394. *E. multistriatus*, n. sp. (foss.), *id. t. c.* p. 396, Lower Carboniferous, Gilmerton and Loanhead, Scotland.

Acrolepis semigranulosus, n. sp. (foss.), *id. t. c.* p. 398, Lower Carboniferous, Straiton, Scotland.

Myriolepis latus, n. sp. (foss.), A. S. WOODWARD, Mem. Geol. Surv. N.S.W., Pal., No. 4, p. 10, pl. iii, figs. 2 & 3, Trias, Gosford, N. S. Wales.

Oxygnathus, Egert. : new diagnosis of the genus ; *id.* Ann. N. H. (6) v, p. 431.

Centrolepis asper, Egert. : noticed and figured by *id. t. c.* p. 430, pl. xvi, fig. 1.

Coccolepis liassicus, n. sp. (foss.), *id. t. c.* p. 433, pl. xvi, fig. 2, Lower Lias of Lyme Regis.

Apateolepis, n. g. (foss.), *Palæoniscidarum*, *id.* Mem. Geol. Surv. N.S.W., Pal., No. 4, p. 12. *A. australis*, n. sp., *id. t. c.* p. 13, pl. iv, figs. 1-4, Trias, Gosford, N. S. Wales.

Actinophorus, n. g. (foss.), *Palæoniscidarum*?; NEWBERRY, Pal. Fishes N. Am. p. 174. *A. clarkii*, n. sp., *id. t. c.* p. 175, pl. xlix, fig. 1, Carboniferous, Ohio.

Eurynotus microlepidotus, n. sp. (foss.), TRAQUAIR, P. R. Soc. Edinb. xvii, p. 400, Lower Carboniferous, Loanhead, Scotland.

Mesolepis tuberculatus and *rhombus*, n. spp. (foss.), *id.* Ann. N. H. (6) vi, p. 493, Lower Carboniferous, Glencartholm, Eskdale, Scotland.

Cheirodus crassus, n. sp. (foss.), TRAQUAIR, P. R. Soc. Edinb. xvii, p. 400, Lower Carboniferous, Abden, Scotland.

Belonorhynchus gigas, p. 23, pls. ix, figs. 1 & 2, & x, figs. 1 & 2, and *gracilis*, p. 27, pls. viii, fig. 5, ix, figs. 3 & 4, & x, figs. 3 & 4, n. spp. (foss.), A. S. WOODWARD, Mem. Geol. Surv. N. S. W., Pal., No. 4, Trias, Gosford, N. S. Wales.

Dictyopyge symmetrica, p. 17, pl. iv, figs. 5 & 6, *illustrans*, p. 18, pl. iv, figs. 7-9, and *robusta*, p. 20, pl. iii, figs. 4 & 5, n. spp. (foss.), *id. t. c.*, Trias, Gosford, N. S. Wales.

Catopterus minor, p. 57, pl. xvii, figs. 1-4, and *ornatus*, p. 58, pl. xviii, fig. 3, n. spp. (foss.), NEWBERRY, Mon. U. S. Geol. Surv. xiv, Trias of Connecticut.

Acentrophorus chicopensis, n. sp. (foss.), NEWBERRY, Mon. U. S. Geol. Surv. xiv, p. 69, pl. xix, figs. 3 & 4, Trias of Massachusetts.

Ischypterus micropterus, p. 31, pls. iv, figs. 1 & 2, & xii, fig. 2, *robustus*, p. 36, pl. vi, fig. 1, *elegans*, p. 37, pls. vii, fig. 2, x, fig. 1, & xiv, figs. 1 & 2, *alatus*, p. 37, pl. viii, figs. 1 & 2, *modestus*, p. 38, pl. ix, figs. 1 & 3, *lenticularis*, p. 39, pl. x, figs. 2 & 3, *lineatus*, p. 40, pl. xi, figs. 1 & 2, *braunii*, p. 43, pls. xii, fig. 3, & xiii, figs. 1 & 2, *minutus*, p. 48, pl. xiii, fig. 5, and *gigas*, p. 49, pl. xiv, fig. 3, n. spp. (foss.), *id. t. c.*, Trias of New Jersey and Connecticut.

Semionotus australis, p. 31, pl. vi, fig. 2, and *tenuis*, p. 31, pl. vi, fig. 3, n. spp. (foss.), A. S. WOODWARD, Mem. Geol. Surv. N. S. W., Pal., No. 4, Trias, Gosford, N. S. Wales.

Pristisomus, n. g. (foss.) *Semionotidarum*; *id. t. c.* p. 32. *P. gracilis*, p. 33, pls. v, fig. 1, vi, fig. 1, & viii, fig. 1, *latus*, p. 35, pl. v, figs. 2 & 4, and *crassus*, p. 36, pl. v, figs. 5-7, n. spp., *id. t. c.*, Trias, Gosford, N. S. Wales.

Cleithrolepis altus, n. sp. ? (foss.), *id. t. c.* p. 42, pl. viii, fig. 4, Trias, Gosford, N. S. Wales.

Lepidotus sibiricus, n. sp. (foss.), ROHON, Mém. Ac. Pétersb. xxxviii, No. 1, p. 9, pls. i & ii, Jurassic of Ust-Balei, E. Siberia.

Pholidophorus maacki, n. sp. (foss.), *id. t. c.* p. 10, pl. i, figs. 7 & 10, Jurassic of Ust-Balei, E. Siberia. *P. gregarius*, n. sp. (foss.), A. S. WOODWARD, Mem. Geol. Surv. N. S. W., Pal., No. 4, p. 44, pl. vi, figs. 6-10, Trias, Gosford, N. S. Wales.

Peltopleurus (?) *dubius*, n. sp. (foss.), *id. t. c.* p. 47, pl. vi, figs. 4 & 5, Trias, Gosford, N. S. Wales.

Strobilodus purbeckensis, n. sp. (foss.), *id.* P. Z. S. 1890, p. 350, pl. xxix, fig. 4, Purbeck, Swanago.

Eurycormus grandis, A. S. Woodw. : description of the head ; *id.* Geol. Mag. (3) vii, p. 289, pl. x, figs. 1-8.

Aspidorhynchus crassus, n. sp. (foss.), A. S. WOODWARD, Proc. Geol. Ass. xi, p. 296, pl. iii, figs. 11-15, Lower Oolite, Stonesfield.

Leptolepis disjectus, n. sp. (foss.), *id.* t. c. p. 295, pl. iii, figs. 16-19, Lower Oolite, Stonesfield.

Mesodon daviesi, n. sp. (foss.), *id.* P. Z. S. 1890, p. 351, pl. xxviii, fig. 5, Purbeck, Swanago. *M. damoni*, n. sp. (foss.), *id.* Geol. Mag. (3) vii, p. 158, Portland Oolite, Weymouth. *M. biserialis*, fig. 20, *discoides*, fig. 32, and *temuidens* [*latidens*, *errore*], fig. 29, n. spp., *id.*, Proc. Geol. Ass. xi, p. 300, pl. iii, Oolite, England.

↓ *Scaphodus*, n. g. [= *Mesodon*] ; *S. heteromorphus*, n. sp. (foss.), *id.* t. c. p. 301, pl. iii, figs. 33-35, Stonesfield.

✓ *Anomoedus*, Forir. This genus, allied to *Mesodon* and *Coelodus*, is characterized, and the type species, *A. fraiponti*, Forir, described and figured ; FORIR, Ann. Soc. Géol. Belg. xvi, p. 445, pl. xiv, fig. 1. *Pycnodus cretaceus*, Ag., is also referred to this genus.

Oligopleurus vectensis, n. sp. (foss.), A. S. WOODWARD, P. Z. S. 1890, p. 346, pls. xxviii, figs. 1-4, & xxix, figs. 1 & 2, Wealden, Isle of Wight.

Coccodus lindstroemi, n. sp. (foss.), J. W. DAVIS, Q. J. Geol. Soc. xlv, p. 565, pl. xxii, Chalk of Hakel, Mount Lebanon.

Leedsichthys problematicus, A. S. Woodw. : note on the gill-rakers ; A. S. WOODWARD, Geol. Mag. (3) vii, p. 292, pl. x, figs. 9 & 10.

Opsigonus gracilis, n. sp. (foss.), ROHON, Mém. Ac. Pétersb. xxxviii, No. 1, p. 11, pl. i, fig. 6, Jurassic of Ust-Balei, E. Siberia.

✓ *Baleiichthys*, n. g. (foss.) (*Homocerci*), for *B. graciosa*, and *B. lata*, n. spp.; *id.* t. c. pp. 13 & 14, pls. i, fig. 8, & ii, fig. 14, Jurassic of Ust-Balei, E. Siberia.

INCERTÆ SEDIS.

O. JAEKEL, SB. nat. Fr. 1890, pp. 117-131, writes on fossil fin-spines and ichthyodorulites, and proposes the new name *Trachyacanthidae* for *Gampsacanthus*, St. John & Worth., and allies.

Ctenacanthus randelli, p. 105, *clarkii*, p. 168, pl. xxvi, figs. 2 & 3, *angustus*, p. 181, *lettonii*, p. 202, pl. xxvi, fig. 1, and *cylindricus*, p. 202, pl. xxvi, fig. 1, n. spp., NEWBERRY, Pal. Fishes N. Am., Carboniferous, N. America.

Asteroptychius elegans, n. sp., *id.* t. c. p. 176, pl. xxv, fig. 4, Lower Carboniferous, Michigan.

Physonemus stellatus, n. sp., *id.* t. c. p. 200, pl. xxi, fig. 12, Carboniferous, Indiana.

Gyracanthus sherwoodi, p. 119, pl. xviii, fig. 4, and *inornatus*, p. 177, pl. xxiii, fig. 5, n. spp., *id.* t. c., Carboniferous of N. America.

Gyracanthus rectus, n. sp., TRAQUAIR, Ann. N. H. (6) vi, p. 417, Lower Carboniferous, Scotland. *G. incurvus*, n. sp., for a Selachian ichthyodolite from the Devonian of Canada; *id.* Geol. Mag. (3) vii, p. 21.

✓*Palaeospondylus gunnii*, n. g. & sp., *id. t. c.* p. 485, fig., Old Red Sandstone, Caithness.

✓*Heteracanthus*, n. g., for *C. wrighti*, Newb., and *H. politus*, n. sp.; NEWBERRY, Pal. Fishes N. Am. p. 65, Cement Beds, Hamilton age, Wisconsin.

✓*Callognathus*, n. g., *id. t. c.* p. 69; *C. regularis*, p. 70, pl. xxvii, fig. 18, *serratus*, p. 70, pl. xxvii, figs. 16 & 17, and *ortoni*, p. 71, pl. xix, fig. 1, n. spp., Devonian of Ohio.

✓*Stethacanthus*, n. g., *id. t. c.* p. 198. *S. tumidus*, p. 129, pl. xxv, figs. 1 & 2, and *marginatus*, n. spp., *id. t. c.* pl. xix, fig. 9, Carboniferous, Indiana and Ohio.

✓*Pentagonolepis*, n. g., for Ganoid scales of obscure affinities; LOHEST, Ann. Soc. Géol. Belg. xv, p. 159. *P. konincki*, n. sp., *id. t. c.* p. 161, pl. xi, figs. 1-8, Upper Devonian of Belgium.

TELEOSTEI.

SØRENSEN, W. Om Forbeninger i Svømmeblæren, Pleura og Aortas Væg og S sammensmeltning deraf med Hvirvelsøjlen særlig hos Siluroiderne, samt de saakaldte Weberske Knoglers Morfologi.—Sur les ossifications de la paroi de la vessie natatoire, de la plèvre et de l'aorte, et leur fusion avec la colonne vertébrale, surtout chez les Siluroïdes, et sur la morphologie des ossicules de Weber. Vid. Selsk. Skr. (6) vi, pp. 67-152, pls. i-iii. [With French résumé.]

BRIDGE, T. W. On the Structure and Function of the Air-Bladder in certain Fishes. P. Birmingham. Phil. Soc. vii, pp. 144-187.

McINTOSH, W. C. On the Larval and Post-Larval Stages of the Sole and other Food-Fishes. [Abstract.] Rep. Brit. Ass. lix, p. 618.

RYDER, J. A. The Continuity of the Primary Matrix of the Scales and the Actinotrichia of Teleosts. Am. Nat. xxiv, pp. 489-491.

WIEDERSHEIM, R. Weitere Mittheilungen über die Entwicklungsgeschichte des Schulter- und Beckengürtels. Teleostier. Anat. Anz. v, pp. 13-19, figs.

RAFFAELE, F. Sullo spostamento postembrionale della cavità addominale nei Teleostei. MT. z. Stat. Neap. ix, pp. 305-329, pls. xii & xiii.

HOLT, E. W. L. Observations upon the Development of the Teleostean Brain, with especial reference to that of *Clupea harengus*. Zool. Jahrb., Anat. iv, pp. 478-500, pls. xxix-xxxi.

ACANTHOPTERYGII.

PERCIDÆ.

✓*Epitrachys*, n. subg., for *Perca fluviatilis*, L. ; ERWIN SCHULZE, J. Ber. Ver. Magdeburg, 1889, p. 209.

Etheostoma tippecanoe, n. sp., JORDAN & EVERMANN, P. U. S. Nat. Mus. xiii, p. 3, fig. 1, Indiana.

Centropristis investigatoris, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 199, off Madras coast, 98-102 fath.

Anthias mundulus, n. sp., JOHNSON, P. Z. S. 1890, p. 452, Madeira.

Serranus aquidens, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 61, Pacific coast of N. America.

Brephostoma, Alcock, is now referred to the *Percidæ*, near *Pomatomus*, Risso ; ALCOCK, Ann. N. H. (6) vi, p. 201. *B. carpenteri*, Alcock, figured ; t. c. pl. ix, fig. 4.

✓*Parascombrops*, n. g., allied to *Scombrops*, but dorsal with 9 spines, and preoperculum with a double serrated edge. *A. pellucidus*, n. sp., ALCOCK, J. A. S. B. lviii, p. 296, pl. xxii, fig. 1, Bay of Bengal.

Pronotoqrammus eos, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 62, Pacific coast of N. America.

SQUAMIPINNES.

Chelmo rostratus, L. : note on young specimens, by VAILLANT, C.R. cxi, p. 756.

Holacanthus clarionensis, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 72, Pacific coast of N. America.

SPARIDÆ.

Pagrus, Cuv. : on a subfossil skull from Melbourne ; DAMES, SB. nat. Fr. 1890, p. 162, fig.

SCORPÆNIDÆ.

Sebastes serrulatus and *muciparus*, n. spp., ALCOCK, J. A. S. B. lviii, p. 298, pl. xxii, figs. 2 & 3, Bay of Bengal.

Scorpena (Sebastoplus) sierra, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 82, Pacific coast of N. America.

Sebastodes (?) rosæ, n. sp. (foss.), EIGENMANN, Zoe, i, p. 16, fig., Tertiary, Port Harford, California.

Sebastichthys goodei (= *Sebastodes goodei*, Eigenm.), p. 75, *alutus*, p. 76, *rupestris*, p. 76, *zacentrus*, p. 77, *saxicola*, p. 78, *diploproa*, p. 79, *aurora*, p. 80, *introniger*, p. 81, and *sinensis*, p. 81, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, Pacific coast of N. America.

Sebastolobus alascanus, n. sp., BEAN, *t. c.* p. 44, Alaska.

Minous inermis, n. sp., ALCOCK, J. A. S. B. lviii, p. 299, pl. xxii, fig. 4, Bay of Bengal. *M. coccineus*, n. sp., *id.*, Ann. N. H. (6) vi, p. 428, off Ganjam coast.

Hemitripterus marmoratus, n. sp., BEAN, P. U. S. Nat. Mus. xiii, p. 43, Alaska.

BERYCIDÆ.

Melamphaes lugubris, p. 59, and *cristiceps*, p. 60, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, p. 60, Pacific coast of N. America.

SCIENIDÆ.

Micropogon megalops, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 64, Pacific coast of N. America.

Sciæna ophiceps, n. sp., ALCOCK, J. A. S. B. lviii, p. 300, Bay of Bengal.

Corvula sanctæ-luciæ, n. sp., JORDAN, P. U. S. Nat. Mus. xii, p. 649, St. Lucia, W. Indies.

Cynoscion macdonaldi, n. sp., GILBERT, *op. cit.* xiii, p. 64, Pacific coast of N. America.

CARANGIDÆ.

Trachurus melanosaurus, Cocco, described by FACCIOLÀ, Nat. Sicil. ix, p. 234.

✓ *Bathyseriola*, n. g. : body oblong and compressed, covered with small deciduous cycloid scales. Lateral line apparently unarmed. First dorsal fin continuous, with rather feeble spines ; the second and the anal much more developed and without finlets. Anal spines approximated to and continuous with the rest of the fin. Ventral with a continuous membranous attachment to the abdomen. Cleft of mouth narrow ; villiform teeth in the jaws only. Preopercular border entire. Seven branchiostegals. Pseudobranchiæ. Pyloric appendages numerous. No air-bladder. Vertebrae 10/14. *B. cyanea*, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 202, off the coast of Madras, 98-102 fath.

Anomalops palpebratus, Bodd., redescribed by DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 69.

SCOMBRIDÆ.

Thynnus thynnus, L., recorded fossil from the Forest bed of Cromer ; E. T. NEWTON, Geol. Mag. (3) vii, p. 264. *T. scaldisiensis*, Storms (?) : on the evidence of a fossil Tunny in the Coralline Crag of England ; A. S. WOODWARD, Ann. N. H. (6) v, p. 294.

TRACHINIDÆ.

Uranoscopus crassiceps, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 205, off the coast of Madras, 98-102 fath.

Aphritis bassii, Casteln., redescribed by DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 67.

✓ *Ponerodon*, n. g. Body elongate, naked. Eyes lateral. Two separate dorsal fins, of which the second is much the longer, and equal, opposite, and similar to the anal; ventrals thoracic; pectoral rays branched. Cleft of mouth extremely wide; jaws distensible and armed with canine teeth, as are also the palatines. Gill-openings very wide, the gill-membranes united anteriorly; præoperculum with a (small) spine at its angle; seven branchiostegals; pseudobranchiæ. Lateral line single, uninterrupted. Abdominal cavity enormous. No air-bladder. No pyloric cæca. No anal papilla. Vertebrae 14/24. *P. vastator*, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 203, pl. ix, fig. 5, off Madras coast, 690-920 fath.

ICOSTEIDÆ.

Bathymaster hypoplectus, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 97, Pacific coast of N. America.

PSYCHROLUTIDÆ.

Psychrolutes zebra, n. sp., BEAN, P. U. S. Nat. Mus. xiii, p. 43, Alaska.

PEDICULATI.

GUITEL, F. Sur la Ligne Latérale de la Baudroie (*Lophius piscatorius*). C.R. cx, pp. 50-52.

Lophius indicus, n. sp., ALCOCK, J. A. S. B. lviii, p. 302, Bay of Bengal.

✓ *Paroneiroides*, n. g. (?), differing from *Oneiroides*, Lützk., in possessing a second cephalic instead of a true dorsal spine. *P. glomeratus*, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 206, pl. ix, fig. 6, off Madras coast, 1260 fath.

Pterophryne histrio, L.: mimicry of the environment in this fish; J. E. IVES, P. Ac. Philad. 1889, p. 344.

Halieutaea spongiosa, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 124, Pacific coast of N. America.

COTTIDÆ.

JOURDAN, E. Structure histologique des Barbillons et des Rayons libres du *Peristedion cataphractum*. Arch. Z. expér. (2) viii, pp. 603-616, pl. xxxii.

Cottus uncinatus, Reinh., recorded from the Pleistocene of Ottawa, Canada, by DAWSON, Can. Rec. iv, p. 86.

Icelus scutiger and *euryops*, n. spp., BEAN, P. U. S. Nat. Mus. xiii, p. 41, Alaska.

Icelinus cavifrons, p. 83, *filamentosus*, p. 85, *tenuis*, p. 86, *fimbriatus*, p. 87, and *oculatus*, p. 87, n. spp., GILBERT, t. c. Pacific coast of N. America.

Dasycottus, n. g., allied to *Cottunculus*. *D. setiger*, n. sp., BEAN, t. c. p. 42, Alaska.

✓*Malacottus*, n. g., allied to *Cottunculus*. *M. zonurus*, id. t. c. p. 43, Alaska.

✓*Radulinus*, n. g. (*Cottidarum*). Spinous dorsal short, soft dorsal and anal very long; branchiostegal membranes broadly united, posteriorly free from isthmus; no slit behind last gill; broad bands of cardiform teeth on jaws, a single series on vomer, none on palatines; preopercle with two short, simple spines; ventrals 1, 3; body very slender; sides armed with a series of large, keeled, spinous plates along lateral line; similar plates on head. *R. asprellus*, n. sp., GILBERT, t. c. p. 88, Pacific coast of N. America.

Trigla hemisticta, Schleg.: note on specimens from the Bay of Bengal; ALCOCK, Ann. N. H. (6) vi, p. 207.

Lepidotrigla spiloptera, Gthr., n. var. *longipinnis*, id. t. c. p. 429, off Ganjam coast.

Prionotus alepis, n. sp.; id. J. A. S. B. lviii, p. 303, pl. xxii, fig. 5, Bay of Bengal.

✓*Synchirus*, n. g., type of a new subfamily, *Synchirinae*. Ventral fins thoracic, but remote from the gill-opening, and consisting of a rudimentary spine and several rays; with a short and well-developed spinous dorsal, which is separated by a deep notch from the soft portion; the spines slender; the branchial apertures wide and the gill-membrane free from the isthmus; gills $3\frac{1}{2}$, apparently with no slit behind the last; pectoral fins continuous around the breast, the rays supported all round by actinosts; the genital papilla of males capable of being received into a pit in front of the anal fin. BEAN, P. U. S. Nat. Mus. xii, p. 641, and Ann. N. H. (6) vi, p. 119. *S. gilli*, n. sp.; id. t. c. p. 642, Barclay Sound, British Columbia.

CATAPHRACTI.

CALDERWOOD, W. L.: On the Swimming Bladder and Flying Powers of *Dactylopterus volitans*: P. R. Soc. Edinb. xvii, pp. 132-138, pl.

Dactylopterus, Lacép.: notes on the characteristics of the *Dactylopteroidea*, and figure of *D. volitans*, L.; GILL, P. U. S. Nat. Mus. xiii, p. 243, pl. xix.

✓*Bathygonus*, n. g. (*Agonidarum*). Spinous dorsal developed; lower jaw the longer; plates of body spinous; gill-membranes united to the isthmus, not forming a fold across it; teeth well-developed on jaws, vomer, and palatines; pectorals not notched, the upper rays the longest, the lower becoming regularly shortened; bones of head thin and yielding,

the system of mucous canals very strongly developed. *B. nigripinnis*, n. sp., GILBERT, *t. c.* p. 89, Pacific coast of N. America.

↓ *Xenochirus*, n. g. (*Agonidarum*). Spinous dorsal present; jaws equal, or the upper the longest; plates of body spinous; gill-membranes united to the isthmus, the posterior edge sometimes forming a very narrow free fold across the throat; teeth well developed on jaws, vomer, and palatines; pectorals divided by a deep notch into two portions, the lower composed of greatly thickened rays, which are simple and frequently longer than those of upper lobe; a series of small spines on eyeball above pupil; *id. t. c.* p. 90. *X. triacanthus*, p. 91, *pentacanthus*, p. 91, *lutifrons*, p. 92, n. spp., *id. t. c.*, Pacific coast of N. America.

DISCOBOLI.

GUITEL, F. Sur le Nerf Latéral des Cycloptéridés. C.R. cxi, pp. 536-539.

Liparis vulgaris, Flem.: on its occurrence on the Irish Coast; R. SCHARFF, Sci. P. R. Dubl. Soc. (2) vi, p. 448.

Paraliparis rosaceus, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 93, Pacific coast of N. America.

Careproctus spectrum, n. sp., BEAN, *t. c.* p. 40, Alaska.

Gobiidæ.

HOLT, E. W. L. On the Ova of *Gobius*. Ann. N. H. (6) vi, pp. 34-40, pl. ii.

Gobius fallax, n. sp., Sarato, Gazette de Nice, No. 16, 1889, = *G. buccichii*, Stdr.; PERUGIA, Ann. Mus. Genov. (2) ix, p. 506. *G. zebra* and *dalli*, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, p. 73, Pacific coast of N. America. *G. cometes*, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 208, pl. viii, fig. 2, off Madras coast, 98-102 fath.

Apocryptes batoides, Day, = *A. bato*, Ham. Buch.; VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 175.

Gillichthys y-cauda, Jenk. & Everm., pl. ii, fig. 5, and *G. mirabilis*, Cooper, pl. iii, fig. 15, figured by EIGENMANN, Zoe, i. *G. y-cauda*, Jenk. & Everm., recorded from San Diego, California, by GILBERT, P. U. S. Nat. Mus. xii, p. 363.

Clevelandia, Eigenm., is distinct from *Gillichthys*, Cooper; EIGENMANN, Am. Nat. xxiii, p. 917 [1890]. *C. longipinna*, Stdr., figured by EIGENMANN, Zoe, i, pl. ii, fig. 4.

Typhlogobius californiensis, Stdr.: notes on habits and development, and figure of the fish; *id. t. c.* p. 66, pl. iii, figs. 1-14; ROSA SMITH EIGENMANN, *t. c.* p. 181.

Callionymus carebares, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 209, pl. viii, off Madras coast, 98-102 fath.

Amblyopus arctocephalus, n. sp., *id. t. c.* p. 432, off Mahanaddi Delta, Bay of Bengal.

CEPOLIDÆ.

Cepola, L. : on its dorsal spines ; HILGENDORF, SB. nat. Fr. 1890, p. 14.

TRICHONOTIDÆ.

Tæniolabrus cyclograptus, n. sp., ALCOCK; Ann. N. H. (6) vi, p. 430, fig., Ganjam coast.

BLENNIIDÆ.

Salaria symptlocos, Hilg., = *Blennius galerita*, L.; HILGENDORF, SB. nat. Fr. 1890, p. 15.

Centronotus gunellus, L. : on the young stages ; W. C. MCINTOSH, Ann. N. H. (6) vi, p. 182.

Zoarcas viviparus, L. : on deformed young specimens ; E. W. L. HOLT, *op. cit.* v, p. 256.

Labrosomus crennobates, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 100, Pacific coast of N. America.

Dactyloscopus lunaticus, n. sp., *id. t. c.* p. 99, Pacific coast of N. America.
Gillellus, n. g., intermediate between *Dactyloscopus* and *Myxodotus* ;
id. t. c. p. 98. *G. semicinctus*, p. 98, and *arenicola*, p. 99, n. spp., *id. t. c.*, Pacific coast of N. America.

✓ *Cryptotrema*, n. g., allied to *Labrosomus*, for *C. corallinum*, n. sp. ; *id. t. c.* p. 101, Pacific coast of N. America.

✓ *Plectobanchus*, n. g. Teeth conic, on jaws, vomer, and palatines; some of them canine-like ; body scaly ; lateral line obsolete, its course indicated by a lighter streak on middle of sides ; gill slits not continued far forwards, the membranes broadly united, wholly free from isthmus ; dorsal of spines only ; anal with two spines ; ventral with one spine and three well-developed rays ; lower pectoral rays longest, as in *Leptoclinus*: *P. evides*, n. sp., *id. t. c.* p. 102, Pacific coast of N. America.

✓ *Lucioblennius*, n. g. Body very elongate, wholly naked ; gill membranes broadly united, free from isthmus ; dorsal fin single, extending along the entire back, its anterior half spinous ; ventrals in front of pectorals, I, 2 ; first two anal rays spinous ; last rays of dorsal and anal joined to caudal ; teeth conic, not movable, in jaws and on vomer and on palatines.
L. alepidotus, n. sp., *id. t. c.* p. 103, Pacific coast of N. America.

✓ *Poroclinus*, n. g. ; *P. rothrocki*, n. sp., BEAN, *t. c.* p. 40, Alaska.

GOBIESOCIDÆ.

Gobiesox pinniger, p. 94, *funeris*, p. 95, *humeralis*, p. 95, *eigenmanni*, p. 96, and *papillifer*, p. 96, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, Pacific coast of N. America.

Lepadogaster, Gouan : notes on the British species, by G. BROOK, P. Phys. Soc. Edinb. 1888-89, p. 161, pl. vii. *L. microcephalus*, n. sp. [= ?

L. couchii, S. Kent], *id. t. c.* p. 166, pl. vii, figs. 1-4 (1889), West coast of Scotland. *L. bimaculatus*, Flem.: on the sexual differences; GÜTEL, C.R. cxi, p. 759.

OPHIOCEPHALIDÆ.

Ophiocephalus apus, Canestrini, = *Channa orientalis*, Bl.; VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 183.

LOPHOTIDÆ.

Lophotes fiski, n. sp., GÜNTHER, P. Z. S. 1890, p. 244, pls. xix & xx, S. Africa.

TRACHYPTERIDÆ.

T. GILL, Am. Nat. xxiv, p. 481, remarks on the characters of the Ribbon Fishes, for which group he uses the name *Tæniosomi*, proposed by him in 1887, and which he divides into two families: *Trachypteridæ* and *Regalecidæ*.

MEEK, A. On the Structure of *Trachypterus arcticus* (the Northern Ribbon-Fish). Stud. Mus. Dundee, i, No. 6, 24 pp., 2 pls.

NOTACANTHI.

A new order, *Heteromeri*, is instituted by GILL, Am. Nat. xxiii, p. 1016 (1890), for these Fishes.

ACANTHOPTERYGII PHARYNGOGNATHI.

LABRIDÆ.

Thalassoma virens, p. 68, *grammaticum*, p. 68, and *socorroense*, p. 69, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, Pacific coast of N. America.

Microsputhodon cinereus, n. sp., *id. t. c.* p. 71, Pacific coast of N. America.

↓ *Calotomus*, n. g., allied to *Cryptotomus*, for *C. xenodon*, n. sp.; *id. t. c.* p. 70, Pacific coast of N. America.

Halichæres sellifer, n. sp., *id. t. c.* p. 67, Pacific coast of N. America.

Julis noronhana, n. sp., BOULENGER, J. L. S. xx, p. 483, Fernando Noronha, Brazil.

Pseudojulis adustus, p. 66, *melanotis*, p. 66, and *inornatus*, p. 67, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, Pacific coast of N. America.

EMBIOTOCIDÆ.

EIGENMANN, C. H. The Development of *Micrometrus aggregatus*, one of the Viviparous Surf-Perches. Am. Nat. xxiii, pp. 923-927 [issued March, 1890].

ANACANTHINI.

LYCODIDÆ.

Lycodes brevipes, n. sp., BEAN, P. U. S. Nat. Mus. xiii, p. 38, Alaska.
L. porifer, n. sp., GILBERT, t. c. p. 104, Pacific coast of N. America.

Lycodopsis crotalinus, p. 105, and *crassilabris*, p. 106, n. spp., *id. t. c.*, Pacific coast of N. America.

✓ *Aprodon*, n. g., differing from *Lycodes* only in dentition, the teeth being present in a single strong series on the palatines, but none on the vomer ; *id. t. c.* p. 106. *A. corteziana*, n. sp., *id. t. c.* p. 107, Pacific coast of N. America.

✓ *Lycodapus*, n. g. Body naked ; ventrals wanting ; vertical fins united around the tail ; gill openings wide, continued forwards under the throat ; gill membranes anteriorly narrowly united, loosely joined to the isthmus by a fold of lax skin ; branchiostegals, six ; no pseudobranchiæ ; gills, four ; a wide slit behind inner arch ; gill-rakers developed ; teeth present in jaws, on vomer and palatines, none of them enlarged ; vent remote from the throat : *id. t. c.* p. 107. *L. fierasfer*, n. sp., *id. t. c.* p. 108, Pacific coast of N. America.

Maynea pusilla and *brunnea*, n. spp., BEAN, t. c. p. 39, Alaska.

✓ *Bothrocara*, n. g., resembling *Maynea*, but the vomer and palate toothless ; *id. t. c.* p. 38. *B. mollis*, n. sp., *id. t. c.* p. 39, Alaska.

GADIDÆ.

THESEN, J. Bidrag til tarmkanalens histologi og physiologi hos Torsken (*Gadus morrhua*). Arch. f. math. og Naturv. xl, pp. 220-231, pl.

A contribution to the histology and physiology of the intestinal tract of the Cod.

Physiculus rastrelliger, p. 113, and *nematopus*, p. 114, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, Pacific coast of N. America.

Motella cimbria, L., and *M. mustela*, L. : notes on the larval stages ; G. BROOK, P. Phys. Soc. Edinb. 1888-89, p. 156, pl. vi [1889].

Raniceps raninus, L. : notes on the osteology ; GILL, P. U. S. Nat. Mus. xiii, p. 235, pl. xviii.

Antimora microlepis, n. sp., BEAN, t. c. p. 38, Alaska.

Onus, Risso : synopsis of the species ; COLLETT, Bull. Soc. Z. Fr. xv, p. 109. *O. guttatus*, p. 105, Azores, and *biscayensis*, p. 107, Bay of Biscay and Cape Finistère, n. spp., *id. t. c.*

Leucopsarion, Hilg. : further notes by HILGENDORF, SB. nat. Fr. 1890, p. 16.

OPHIDIIDÆ.

Dinematichtys piger, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 432, Great Coco I., Andaman Archipelago.

Neobythites pterotus, n. sp., *id. t. c.* p. 210, off Madras coast, 1310 fath.
N. stelliferoides, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 112, Pacific coast of N. America.

Catatyx rubrirostris, n. sp., *id. t. c.* p. 111, Pacific coast of N. America.

Leptophidium pardale, p. 108, *microlepis*, p. 109, *stigmatitum*, p. 109, and *emmelas*, p. 110, n. spp., *id. t. c.*, Pacific coast of N. America.

Otophidium galeoides, n. sp., *id. t. c.* p. 110, Pacific coast of N. America.

† *Monomitopus*, n. g., like *Sirembo*, Blkr., but with rudimentary pseudo-branchiæ, for *Sirembo nigripinnis*, ALCOCK; ALCOCK, Ann. N. H. (6) vi, p. 297.

† *Paradicrolene vaillanti*, n. n. for *Dicrolene introniger*, Vaill., nec Goode & Bean; *id. ibid.*

↓ *Dermatorus*, n. g., allied to *Porogadus*, Goode & Bean, and *Bathyanus*, Gthr. Body compressed, with long tapering tail. Head with well-developed muciparous cavities and spiniferous bones. Snout depressed, with jaws conterminous in front. Eye of moderate size. Mouth very wide; villiform teeth in bands in the jaws and palatines, few and scattered on the vomer. No barbel. Gill-openings very wide; eight branchiostegals; four gills; well-developed gill-rakers. Pseudobranchiæ quite rudimentary. Scales small, deciduous. Lateral line indistinct. Ventral fins contiguous; each consists of a simple filament. No pyloric cæca. *D. trichiurus*, n. sp., *id. t. c.* p. 298, Arabian Sea, 1000 fath.

MACRURIDÆ.

Macrurus hoskynii, p. 214, off Madras coast, 1310 fath., *hextii*, p. 299, Arabian Sea, 1000 fath., and *woodmasoni*, p. 301, Arabian Sea, 1000 fath., n. spp., ALCOCK, Ann. N. H. (6) vi. *M. (Coelorhynchus) scaphopsis*, p. 115, *M. (M.) stelgidolepis*, p. 116, and *M. (Lionurus) liolepis*, p. 117, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, Pacific coast of N. America,

Chalinura serrula, n. sp., BEAN, *t. c.* p. 37, Alaska.

PLEURONECTIDÆ.

CUNNINGHAM, J. T. A Treatise on the Common Sole (*Solea vulgaris*), considered both as an Organism and as a Commodity. Prepared for the Marine Biological Association of the United Kingdom, Plymouth: 1890, 4to, 147 pp., 18 pls.

Hippoglossus grigorjewi, n. sp., HERZENSTEIN, Mém. biol. xiii, p. 134, Japan.

Hippoglossina bollmanni, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 122, Pacific coast of N. America.

† *Lioglossina*, n. g., differing from *Hippoglossina* by the cycloid scales, and from *Xystreurus* by the uniform fine teeth. *L. tetraphthalmus*, n. sp., *id. t. c.* p. 122, Pacific coast of N. America.

Rhombus maximus, Cuv. : on an anomalous specimen ; FILHOL, Bull. Soc. Philom. (8) ii, p. 54, fig. *R. ligusticus*, n. sp. (foss.), POLLINI, Sopra alcuni Pesci fossili terziari, p. 92 (Milan : 1889), Tertiary, Santa Giustina, Liguria.

Arnoglossus lophotes, Gthr., and *A. grohmanni*, Bp. : note on their distinctive characters, with figures ; GÜNTHER, P. Z. S. 1890, p. 40, pl. iii. Remarks on the same species by J. T. CUNNINGHAM, *t. c.* p. 540, fig., who regards *A. lophotes* as the male of *A. laterna*. *A. macrolophus*, n. sp., ALCOCK, J. A. S. B. lviii, p. 280, pl. xviii, fig. 2, Bay of Bengal. *A. polylepis*, n. sp., *id. t. c.* p. 290, pl. xvi, fig. 1, E. coast of Ceylon. *A. brevirectis*, n. sp., *id. Ann. N. H.* (6) vi, p. 433, off Ganjam coast.

Rhomboidichthys azureus, n. sp., ALCOCK, J. A. S. B. lviii, p. 283, pl. xvi, fig. 3, Bay of Bengal. *R. valde-rostratus*, n. sp., *id. Ann. N. H.* (6) vi, p. 435, Ceylon.

Psettylis, n. g., allied to *Rhomboidichthys* ? Body subcircular. Jaws and dentition symmetrical ; mouth very small, the length of the maxilla being less than one-fourth that of the head ; teeth minute, in the jaws only. Eyes on the left side, separated by a broad concave space. The dorsal fin commences on the snout ; its rays and those of the anal simple. No scales. Lateral line with a sharp or faint curve above the pectoral. *id. t. c.* p. 436. *P. pellucida* and *ocellata*, n. spp., *id. t. c.* p. 437, figs., Bay of Bengal.

Platophrys teniopterus, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 118, Pacific coast of N. America.

Citharichthys xanthostigma and *fragilis*, n. spp., *id. t. c.* p. 120, Pacific coast of N. America.

Ancylopsetta dendritica, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 121, Pacific coast of N. America.

Brachypleura xanthosticta, n. sp., ALCOCK, J. A. S. B. lviii, p. 281, pl. lvii, fig. 3, Bay of Bengal.

Samaris cristatus, Gray, described and figured by *id. t. c.* p. 291, pl. xvii, fig. 4.

Laops guentheri, n. sp., *id. t. c.* p. 438, Bay of Bengal.

Scianectes macrophthalmus, Alcock : description amended by *id.*, *Ann. N. H.* (6) vi, p. 216.

Pleuronectes scutifer, Stdr., 1870, = *Platessa bicolorata*, Bazil, 1855 ; HERZENSTEIN, Mém. biol. xiii, p. 133. *P. obscurus*, p. 127, and *japonicus*, p. 130, n. spp., *id. t. c.*, Mantchuria and Japan.

Solea vulgaris and *Pleuronectes cynoglossus* : remarks on postlarval young specimens ; W. S. GREEN, Nature, xlii, p. 520, & xliii, p. 56 ; J. T. CUNNINGHAM, *t. c.* xliii, p. 104.

Solea lascaris, Risso (= *S. aurantiaca*, Gthr.), and *S. scriba*, Val. (= *S. lascaris*, Gthr., nec Risso) : on their synonymy ; GÜNTHER, P. Z. S. 1890, p. 44. *S. oculus*, n. sp., ALCOCK, J. A. S. B. lviii, p. 285, pl. xviii, fig. 3, Bay of Bengal. *S. cyanea*, n. sp., *id. t. c.* p. 439, Bay of Bengal.

Synaptura altipinnis, n. sp., *id. t. c.* p. 441, off Vizagapatam coast.

Cynoglossus carpenteri, p. 287, pl. xviii, fig. 1, and *intermedius*, p. 288, n. spp., *id. t. c.*, Bay of Bengal. *C. versicolor*, off Orissa coast, and *præcisus*, off Ganjam coast, n. spp., *id. t. c.* p. 442. *C. bathybius*, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 123, Pacific coast of N. America.

Aphoristia gilesii, p. 293, pl. xvii, fig. 2, and *wood-masoni*, p. 294, pl. xvii, fig. 1, n. spp., ALCOCK, J. A. S. B. lviii, Bay of Bengal, 193-490 fath.

Scianectes, n. g. Jaws and dentition equal on both sides; dorsal fin commencing before the eye, on the snout; body pyriform and delicate; mouth small, the length of the maxillary being less than one third of the length of the head; teeth minute, in a single series in both jaws; vomerine teeth; eyes on the left side and close together; all the rays of the vertical fins simple, elongated, weak, and filamentous; scales minute, membranous, and deciduous; lateral line with a curve above the pectoral; gill-membranes united at the throat; gill-rakers distant and short. *S. lophoptera*, n. sp., *id. t. c.* p. 284, Bay of Bengal. *S. macrophthalmus*, n. sp., *id. t. c.* p. 292, pl. xvi, fig. 4, S.W. of Akyab, 100 fath.

PHYSOSTOMI,

SILURIDÆ.

EIGENMANN, C. H. & R. S. A Revision of the South American *Nematognathi*, or Cat-Fishes. Occasional Papers of the California Academy of Sciences, i, 508 pp.

The American Siluroids are referred to five families:—*Bunocephalidæ*, *Diplomystidæ*, *Siluridæ*, *Hypophthalmidæ*, *Pygididæ*. This classification was proposed in a paper published previously, viz.:

EIGENMANN, C. H. The Evolution of the Cat-Fishes. *Zoe*, i, pp. 10-15.

Diplomystes is raised to family rank on account of its dentiferous maxillary,

Silurus glanis, L.: on an albino; HILGENDORF, SB. nat. Fr. 1890, p. 17. *S. (Parasilurus) aristotelis* (Ag. MS.), n. sp., GARMAN, Bull. Ess. Inst. xxii, p. 56, Acarnania, Greece.

Macrones, Düm.: synopsis of the Burmese species; VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 89. *M. rufescens*, p. 226, pl. vii, fig. 2, and *dayi*, p. 230, pl. vii, fig. 3, n. spp., *id. t. c.*, Burma.

Liocassis moeschii, n. sp., BOULENGER, P. Z. S. 1890, p. 39, Sumatra.

Ictalurus dugesi, Bean: note on the poison apparatus; DUGÈS, Nat. Mex. (2) i, p. 405, pl. xxvii.

Olyra, McCl.: synopsis of the (3) species; VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 68. *O. elongata*, Gthr., figured by *id. t. c.* pl. vii, fig. 1.

Exostoma, Blyth: synopsis of the species; *id. t. c.* p. 260. *E. macrop-*

terum, p. 253, pl. viii, fig. 5, and *feæ*, p. 256, pl. viii, fig. 6, n. spp., *id. t. c.*, Upper Burma.

Glyptothorax dorsalis, n. sp., *id. t. c.* p. 246, pl. vii, fig. 4, Upper Burma.

Arges, C. & V.: synopsis of the species, by BOULENGER, P. Z. S. 1890, p. 450. *A. taczanowski*, fig. 1, Peruvian Andes, and *A. whymperei*, fig. 2, Andes of Ecuador, n. spp., *id. t. c.* p. 451, pl. xli.

SCOPELIDÆ.

Scopelus langerhansi, p. 454, *schmetzi*, p. 456, and *pusillus*, p. 457, n. spp., JOHNSON, P. Z. S. 1890, Madeira. *S. pterotus*, p. 217, 98–102 fath., and *pyrsobolus*, p. 218, pl. viii, fig. 3, 690–920 fath., n. spp., ALCOCK, Ann. N. H. (6) vi, off Madras coast.

Scopelogenys, n. g., apparently nearly allied to *Scopelus*, Gthr., and to *Nanobranchium*, Gthr. Head and body compressed. Eye small. Mouth very wide; the maxilla dilated behind. Acute villiform teeth, in bands uncovered by the lips in the jaws, and in the palatines and vomer. Gill-openings very wide; gill-covers complete. Pseudobranchiæ rudimentary. Dorsal fin near the middle of the body, short; an adipose dorsal. Anal fin short. Caudal forked. Pectorals well developed. Ventrals with eight rays. [Scales, if present, very deciduous.] No air-bladder. Pyloric cæca present in moderate number; *id. t. c.* p. 302. *S. tristis*, n. sp., *id. t. c.* p. 303, Arabia Sea, 1000 fath.

Myctophum nonnochir, p. 51, *mexicanum*, p. 51, and *protoculus*, p. 52, n. spp., GILBERT, P. U. S. Nat. Mus. xiii, Pacific coast of N. America.

Synodus lacertinus, n. sp., *id. t. c.* p. 55, Pacific coast of N. America.

CYPRINIDÆ.

K. KNAUTHE, Zool. Gart. xxxi, pp. 56 & 57, remarks on the breeding habits of *Phoxinus levis*, *Leucaspis delineatus*, and *Cobitis barbatula* in Silesia.

✓*Protocatostomus*, n. g., for *P. constablei*, n. sp. (foss.) = ? *Notogeneus osculus*, Cope; WHITFIELD, Bull. Am. Mus. Nat. Hist. iii, p. 117, pl. iv, Eocene of Wyoming.

Discognathus imberbis, n. sp., VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 149, pl. ix, fig. 7, Karennee Hills.

✓*Scaphiodonichthys*, n. g., allied to *Capoeta*, C. & V.; *id. t. c.* p. 281. *S. burmanicus*, n. sp., *id. t. c.* p. 285, pl. xi, fig. 11, Burma.

Barbus petenyi, Heek., recorded from Silesia by KNAUTHE, Zool. Anz. xiii, p. 720. *B. hampaloides*, n. sp., VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 298, pl. ix, fig. 8, Tenasserim.

Matsya argentea, Day, = *Barbus altus*, Gthr.; VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 289.

Alburnus charusini, n. sp., Herzenstein, Mém. biol. xiii, p. 136, fig., Malyi-Usen river, Central Asia.

↓ *Metallites*, n. subg., for *Leuciscus rutilus*, L. ; ERWIN SCHULZE, J. Ber. Ver. Magdeburg, 1889, p. 194.

Leucaspis delineatus, Sieb., recorded from Linz on the Rhine, by MELSHEIMER, Verh. Ver. Rheinl. (5) vii, p. 83.

Osteobrama fee, n. sp., VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 311, pl. x, fig. 10, Upper Burma.

Barilius barnoides, n. sp., *id. t. c.* p. 307, pl. ix, fig. 9, Upper Burma.

Nemachilus kuschakewitschi, n. sp., HERZENSTEIN, Mém. biol. xiii, p. 139, Marzellan and Andidshan, Central Asia.

Homalopteridæ. The *Homaloptera* are regarded by VINCIGUERRA, Ann. Mus. Genov. (2) ix, p. 192, as deserving to rank as a family.

↑ *Helgia*, n. g., for *Homaloptera bilineata*, Blyth, and *H. modesta*, n. sp., *id. t. c.* p. 330, Tenasserim ; both are figured, pl. xi, figs. 12 & 13.

W. DAMES, JB. Min. 1890, ii, p. 143, regards the teeth described as Mammalian by Marsh, under the name of *Platacodon*, as Cyprinoid pharyngeal teeth.

CHARACINIDÆ.

Anostomus, Gron. : synopsis of the species by GARMAN, Bull. Ess. Inst. xxii, pp. 15-23. *A. proximus*, p. 19, *varius*, p. 19, *nitens*, p. 20, *dissimilis*, p. 22, Brazil, and *plata*, p. 23, La Plata, n. spp., *id. t. c.*

Gasteropelecus pectorosus and *fasciatus*, n. spp., *id. t. c.* p. 9, Brazil.

↑ *Henochilus*, n. g., near *Tetragonopterus* and *Scissor*. *H. wheatlandi*, n. sp., *id. t. c.* p. 49, pl. i, Brazil.

Chalcinus, C. & V. : on the specimens in the Museum of Comparative Zoology at Cambridge, Mass., *id. t. c.* pp. 1-7. *C. guentheri*, p. 4, San Francisco river, and *pictus*, p. 5, Jutahy, Brazil, n. spp., *id. t. c.*

Cynopotamus, C. & V. : notes on the various species ; *id. t. c.* pp. 11-14. *C. biserialis*, n. sp., *id. t. c.* p. 14, Brazil.

CYPRINODONTIDÆ.

Cyprinodon danfordii, n. sp., BOULENGER, Ann. N. H. (6) vi, p. 169, Asia Minor.

Haplochilus hartii, n. sp., *id. t. c.* p. 170, Trinidad.

SCOMBRESOCIDÆ.

Exocoetus xenopterus, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 58, Pacific coast of N. America.

SAURODONTIDÆ.

Protosphyrcna, Leidy (foss.) : remarks on this genus, and description and figure of a skull of *P. nitida*, Cope ; J. FELIX, Z. geol. Ges. xlii, p. 278, pls. xii-xiv.

MORMYRIDÆ.

Mormyrus mento, n. sp., BOULENGER, Ann. N. H. (6) vi, p. 193, Gaboon.

STERNOPTYCHIDÆ.

Chauliodus macouni, n. sp., BEAN, P. U. S. Nat. Mus. xiii, p. 44, Alaska.
Gonostoma maderense, n. sp., JOHNSON, P. Z. S. 1890, p. 458, Madeira.

STOMIATIDÆ.

Idiacanthus antrostomus, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 54, Pacific coast of N. America.

✓ *Thaumastomias*, n. g., allied to *Malacosteus*, Ayres. Body elongate, compressed, scaleless, with the vent not far distant from the caudal fin. Head compressed, with the cranium small, the snout short, and the cleft of the mouth exceedingly wide. A long elastic muscular band passing from the hyoid bone to the inner aspect of the mandibular symphysis. Teeth acute, unequal, in single series in premaxillæ, maxillæ, mandibles, and palatines; none on the tongue. Eye moderate. Gill-covers rudimentary. One dorsal fin opposite to the anal, situated in the posterior fourth of the body, near the caudal. No pectoral fins. Ventral fins situated in the anterior half of the body. Gill-openings very wide. No air-bladder. *T. atrox*, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 220, pl. viii, fig. 7, off Madras coast, 1310 fath.

SALMONIDÆ.

J. KUNSTLER, C.R. cxi, p. 695, has remarks on the Salmon of Norway.

Salmo quinnat, Rich.: on specimens obtained on the South coast of France; MARION & GUITEL, *op. cit.* cx, p. 1311. *S. macrostigma*, A. Dum.: Note on the occurrence of the trout in Algeria, with figure of the fish; A. BERTHOULE, Bull. Soc. Acclim. xxxvii, p. 1182. *S. carpio*, L.: note by E. DE BETTA, Atti Ist. Venet. (7) i, p. 803. *S. mykiss macdonaldi*, n. subsp., JORDAN & EVERMANN, P. U. S. Nat. Mus. xii, p. 453, Twin Lakes, Colorado.

✓ *Epitomynis*, n. n. for *Hucho* and *Salvelinus*, Gthr.; ERWIN SCHULZE, J. Ber. Ver. Magdeburg, 1889, p. 174.

Coregonus, Art.: FATIO, Faun. Vert. Suisse, v, deals very fully with the forms inhabiting Switzerland, and proposes the following new names for species or subspecies not clearly recognized before, or as substitutes for names which are regarded as unsuitable: *cæruleus*, p. 115, *dolosus*, p. 123, *confusus*, p. 132, *alpinus*, p. 140, *nobilis*, p. 146, *compactus*, p. 150, *annectus*, p. 155, *balleoides*, p. 158, *nüsslini*, p. 169, *albellus*, p. 179, *feritus*, p. 185, *bondella*, p. 188, *asperis*, p. 199, *murenoides*, p. 203, *dispar*, p. 215, *schinzi*, p. 219, *helveticus*, p. 222, and *duplex*, p. 252. *C. exiguus bondella* figured; *id. l. c.* pl. i.

Argentina sialis, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 56, Pacific coast of N. America.

✓ *Leuroglossus*, n. g., allied to *Argentina*, for *L. stilbius*, n. sp., *id. t. c.* p. 57, Pacific coast of N. America.

Bathylagus pacificus, n. sp., *id. t. c.* p. 55, Pacific coast of N. America.

CLUPEIDÆ.

HOLT, E. W. L. Some Stages in the Development of the Brain of *Clupea harengus*. Abstract. P. R. Soc. xlvii, pp. 199-202.

G. POUCHET, J. de l'Anat. Phys. xxvi, pp. 620-629, publishes a report of observations relating to the biology of the Sardine on the French coast in 1889.

Clupea pilchardus, Walb.: note on specimens with the number of scales abnormally increased; BATESON, P. Z. S. 1890, p. 586.

Etrumeus acuminatus, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 56, Pacific coast of N. America.

Engraulis enchrasicolus, L.: on its occurrence in Scottish Waters; J. C. EWART, P. Phys. Soc. Edinb. 1889-90, p. 333.

ALEPOCEPHALIDÆ.

Bathytroctes stomias, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 53, Pacific coast of N. America. *B. squamosus*, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 303, Arabian Sea, 740 fath.

✓ *Narcetes*, n. g., closely allied to *Bathytroctes*, Gthr. Head naked. Body rather elongate, compressed, covered with scales of moderate size. Eye rather small. Mouth wide; maxilla extending beyond the vertical through the middle of the orbit. Fine teeth in premaxillæ, maxillæ, mandible, palatines, and vomer, those in the premaxillæ and mandible pluriserial; no teeth on the tongue. Gill-openings wide; gill-covers complete; seven branchiostegals; four gills, with narrow laminæ; gill-rakers long. Pseudobranchiæ present. No adipose dorsal fin. Caudal forked. Pyloric cæca in moderate numbers. Ovaries with an oviduct. *N. erimelas*, n. sp., *id. t. c.* p. 305, Arabian Sea, 740 fath.

Aulastomatomorpha, n. g. Head naked. Body elongate, covered with minute hardly imbricate scales. Anterior bones of the head produced into a long tube terminating in a narrow mouth. Margin of the upper jaw formed equally by the premaxillæ and maxillæ. Uniserial teeth, in the jaws only. Eye large. Gill-cover apparently complete. Gill-opening wide below, contracted above, and not surpassing the level of the pectoral fin; four gills with narrow laminæ. Pseudobranchiæ almost rudimentary. Dorsal fin belonging to the caudal portion of the body; no adipose dorsal. Anal fin very long. Caudal forked. Pyloric cæca few, small. No air-bladder. *A. phospherops*, n. sp., *id. t. c.* p. 307, Arabian Sea, 1000 fath.

Bathyonus glutinosis, n. sp., *id. t. c.*, p. 211, off Madras coast, 1310 fath.

✓ *Tauredophidium*, n. g., allied to *Acanthonus*, Gthr. Head large and

thick, armed on the opercles with strong spines; body compressed. Snout broad, not overhanging the large mouth. Eyes, none. No barbel. Villiform teeth in the jaws, vomer, and palate. Gill-membranes rather broadly united; four gills; eight branchiostegals; no pseudobranchiæ. Small deciduous scales on body and head; lateral lines indistinguishable. Vertical fins confluent; pectorals entire; ventrals widely separated, each consisting of two filaments. *Id. t. c.* p. 212. *T. hextii*, n. sp., *id. t. c.* p. 213, pl. viii, fig. 1, off Madras coast, 1310 fath.

HALOSAURIDÆ.

T. GILL, Am. Nat. xxiii, p. 1015 (1890), proposes to raise this family to the rank of an order, under the name of *Lyopomi*.

Halosaurus hoskynii, n. sp., ALCOCK, Ann. N. H. (6) vi, p. 309, Arabian Sea, 1000 fath.

MURÆNIDÆ.

GILL, T. The Osteological Characters of the Family *Anguillidæ*. P. U. S. Nat. Mus. xiii, pp. 157-160.

— The Osteological Characters of the Family *Synphobranchidæ*. *T. c.* pp. 161-164.

— The Osteological Characters of the Family *Muranidæ*. *T. c.* pp. 165-170.

— Osteological Characteristics of the Family *Muranosocidæ*. *T. c.* pp. 231-234.

— The Osteological Characteristics of the Family *Simenchelyidæ*. *T. c.* pp. 239-242.

Neoconger vermiformis, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 57, Pacific coast of N. America.

Ophichthys nothochir, n. sp., *id. t. c.* p. 58, Pacific coast of N. America.

Labichthys gilli, n. sp., BEAN, *t. c.* p. 45, Alaska.

✓ *Bathymyrus*, n. g. Branchial openings in the pharynx wide slits; tail longer than the trunk; heart situated immediately behind the gills; muscular and osseous systems well-developed; gill-openings separated by an interspace; nostrils labial; tongue not entirely free; end of tail surrounded by the fin, pectorals well-developed; dorsal fin commencing immediately behind the gill-opening; teeth in the jaws uniserial; intermaxillary forming the end of the snout. *B. echinorhynchus*, n. sp., ALCOCK, J. A. S. B. lviii, p. 305, pl. xxii, fig. 6, Bay of Bengal.

↓ *Promyllantor*, n. g., allied to *Congromurana*. Body stout, with the muscular and osseous systems well developed. Tail about as long as the trunk. Muciferous cavities of the head well developed. Eye rather small. Cleft of the mouth narrow, not extending behind the middle of the eye. Villiform teeth, in broad bands in the jaws and in a broad confluent patch on the palate. Tongue free. Nostrils lateral. Gill-openings

widely separate ; four gills with wide clefts. No scales. Pectoral and vertical fins well developed, the latter confluent. The dorsal begins some distance behind the occiput. *P. purpureus*, n. sp., *id.* Ann. N. H. (6) vi, p. 310, Arabian Sea, 1000 fath.

A. VOELTZKOW, Zool. Anz. xiii, p. 314, remarks on a gravid female *Muraena* from Zanzibar.

LOPHOBRANCHII.

Syngnathus altirostris, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. i, p. 55, Moreton Bay and Clarence River.

Ichthyocampus tryoni, n. sp., *id.* t. c. p. 56, Moreton Bay.

PLECTOGNATHI.

Balistes vetula, L. : on a specimen taken at Wood's Holl, Massachusetts ; GARMAN, Bull. Ess. Inst. xxii, p. 53.

Melichthys bispinosus, n. sp., GILBERT, P. U. S. Nat. Mus. xiii, p. 125, Pacific coast of N. America.

Tetodon aurantius, n. sp., DOUGLAS-OGILBY, Rec. Austral. Mus. i, pp. 81 & 101, N. S. Wales.

Orthogoriscus mola, L. : on a young specimen from the coast of Florida ; PERUGIA, Ann. Mus. Genov. (2) vii, p. 365, fig. : on a large specimen from the Dutch coast ; v. LIDTH DE JEUDE, Notes Leyd. Mus. xii, p. 189, pl. viii.

CYCLOSTOMATA.

GASKELL, W. H. On the Origin of Vertebrates from a Crustacean-like Ancestor. Q. J. Micr. Sci. xxxi, pp. 379-444, pls. xxv-xxviii.

Chapter I. The evidence given by the Central Nervous System and Pineal Eyes of the *Ammocetes* of *Petromyzon planeri*.

RETZIUS, G. Biologische Untersuchungen. Neue Folge. i. Stockholm : 1890, fol.

4. Ein s. g. Caudalherz bei *Myxine glutinosa* ; pp. 94-96, pl. xviii, fig. 1.
5. Ueber die Ganglienzellen der Cerebrospinalganglien und über subcutane Ganglienzellen bei *Myxine glutinosa* ; pp. 97-99, pl. xviii, figs. 2-14.

NESTLER, K. Beiträge zur Anatomie und Entwicklungsgeschichte von *Petromyzon planeri*. Arch. f. Nat. lvi, 1, pp. 81-112, pls. vi & vii.

Preliminary communication in Zool. Anz. xiii, pp. 11 & 12.

SPENCER, W. B. The Pineal Eye of *Mordacia mordax*. P. R. Soc. Vict (2) ii, pp. 102-105, fig.

KLINCKOWSTRÖM, A. Beiträge zur Kenntniss des Verlaufes der Darm- und Lebervenen bei *Myxine glutinosa*. Biol. Fören. ii, pp. 62-67.

- KAENSCHKE, C. C. Beiträge zur Kenntniss der Metamorphose des *Ammocætes branchialis* in *Petromyzon*. Zool. Beitr. ii, pp. 219-250, pls. xviii-xxi.
- GOETTE, F. Abhandlungen zur Entwicklungsgeschichte der Tiere. v. Entwicklungsgeschichte des Flussneunauges (*Petromyzon fluviatilis*). Erster Theil. Hamburg & Leipzig: 1890, 4to, 95 pp., 9 pls.
- KUPFFER, C. Die Entwicklung von *Petromyzon planeri*. Arch. mikr. Anat. xxxv, pp. 469-558, pls. xxvii-xxxii.
- RETZIUS, G. Ueber Zellentheilung bei *Myxine glutinosa*. Biol. Förén. ii, pp. 80-91, pl. iii.
- Petromyzon japonicus*, Mart.: notes by HILGENDORF, SB. nat. Fr. 1890, p. 12.

LEPTOCARDII.

- AYERS, H. Contribution to the Morphology of the Vertebrate Head. Zool. Anz. xiii, pp. 504-506.
Deals chiefly with *Amphioxus*.
- SPENGEL, J. W. Beitrag zur Kenntniss der Kiemen des *Amphioxus*. Zool. Jahrb. Anat. iv, pp. 257-296, pls. xvii & xviii.
- WEISS, F. E. Excretory Tubules in *Amphioxus lanceolatus*. Q. J. Micr. Sci. xxxi, pp. 489-497, pls. xxxiv & xxxv.
- KOHL, C. Einige Bemerkungen über Sinnesorgane des *Amphioxus lanceolatus*. Zool. Anz. xiii, pp. 182-185.
- LANKESTER, E. R., & WILLEY, A. The Development of the Atrial Chamber of *Amphioxus*. Q. J. Micr. Sci. xxxi, pp. 445-466, pls. xxix-xxxii.
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TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc.

LIST OF PUBLICATIONS.

1. BROOKS, W. K. On the relationship between *Salpa* and *Pyrosoma*. Johns Hopk. Univ. Circ. v, 9, No. 80, p. 53.
2. CARUS, J. V. Prodrömus Faunæ Mediterraneæ, &c. Stuttgart: Vol. ii, pt. ii, pp. 463-496.
3. CHÜN, C. Die Pelagische Thierwelt in grössen Tiefen. Verh. d. Gesell. Deut. Naturf. &c. Bremen: 1890.
4. DAVIDOFF, M. v. Untersuchungen zur Entwicklungsgeschichte der *Distaplia magnilarva*, Della Valle, einer zusammengesetzten Ascidie. II. Abschnitt, Allgemeine Entwicklungsgeschichte der Keimblätter. MT. z. Stat. Neap. ix, Ht. 4, pp. 533-651, pls. xviii-xxiv.
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6. HENSEN, V. Einige Ergebnisse der Plankton-expedition der Humboldt-Stiftung. SB. Ak. Berlin, 13 Mar. 1890, pp. 243-253.
7. HERDMAN, W. A. On the genus *Ecteinascidia* and its relations; with descriptions of two new species, and a Classification of the family *Clavelinidae*. Tr. Biol. Soc. Liverp. v, pp. 144-163, pls. vi & vii.
8. LAHILLE, FERNAND. Recherches sur les Tuniciers des Côtes de France. Toulouse: 1890, pp. 1-330.
9. LO BIANCO, S. Metodi usati nella Stazione Zoologica per la conservazione degli animali marini. MT. z. Stat. Neap. ix, Ht. 3, pp. 470-473.
10. MORGAN, T. H. The Origin of the Test-cells of Ascidians. J. Morph. iv, No. 2, pp. 195-204, pl. viii.

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11. SALENSKY, W. Zur Entwicklungsgeschichte der *Pyrosoma*. Biol. Centralbl. x, No. 8, June 1, 1890, pp. 225-233.
12. —. Beiträge zur Embryonalentwicklung der Pyrosomen. Zool. Jahrb. iv (Abth. f. Anat. and Ontog.), Ht. 3, pp. 424-477, pls. xxvi-xxviii.
13. SLUITER, C. PH. Die Evertibraten aus der Sammlung des Königlichen naturwissenschaftlichen Vereins in Niederländisch Indien in Batavia. Nat. Tijdschr. Nederl. Ind. l, 1890, pp. 329-348, 2 pls.
14. SWAINSON, G. Appendicularia with its "Haus." Internat. J. Micr. & Nat. Sci. iv, pp. 10-19.
15. WAGNER, N. C. Über das Nervensystem der Tunicaten. Biol. Centralbl. x, pp. 425 & 426.

ANATOMY.

In his work on the French *Tunicata* (8), LAHILLE gives a description of the anatomy and histology of *Pegea* (*Salpa*) *confederata*, of *Pyrosoma*, and of some of the Compound Ascidians. He gives a good account of the structure of the rudimentary gill of *Salpa*, and compares it with the branchial sac of Ascidians, showing that it is formed of a single oblique row of partially-developed stigmata. He introduces convenient formulæ for giving in brief the branchial characters of the species of *Doliolum*. He regards the circular muscle-bands of *Salpa* and *Doliolum* as being homologous with the sphincter muscles of a Compound Ascidian, such as *Aplidium*. He finds that in the *Didemnidæ* the two primitive lateral atrial involutions do not meet dorsally, but remain closed at their inner ends, and are replaced functionally by a median dorsal cloacal invagination.

SLUITER (13) and HERDMAN (7) describe the details of structure of some new species of Simple Ascidians.

EMBRYOLOGY.

DAVIDOFF, in this second part (4) of his elaborate memoir on the development of *Distaplia magnilarva*, gives a very detailed account of the segmentation and gastrulation, the origin and development of the mesoderm, the formation of the endoderm, and of the notochord, and the development of the nervous system in the embryo of this typical Compound Ascidian.

LAHILLE (8) gives good figures of the tailed larvæ of many of the genera of Compound Ascidians.

MORGAN (10) now gives a fuller account of his investigations on the origin of the test-cells of the Ascidian embryo (see last year's Record, *Tun.* 3). In his results he agrees fully with Van Beneden and Julin, and is diametrically opposed to Davidoff. He derives the test-cells entirely

from follicular cells. He worked with various forms of Simple Ascidians, especially species of *Cynthia* and *Clavelina*.

There are two periods in the development of *Pyrosoma*—(1) the conversion of the fertilized ovum into the cyathozoid; (2) the formation of the first four Ascidiozooids by budding. SALENSKY (11, 12) tries to clear up especially two points not dealt with by Huxley and Kowalevsky: 1. The part played in the development of the cyathozoid by the inner follicle cells, which are now called "kalymocytes." 2. The origin and changes of the mesoderm.

The kalymocytes are the "test cells" of ordinary Ascidians. They are follicle cells which have separated from the follicle wall and have wandered to the surface of the yolk. They are pyriform to begin with, but those that migrate into the yolk become amœboid. After passing through the yolk, some of them help to form the wall of the mesenteron. During the mesoblastic segmentation some of the kalymocytes aggregate themselves round the upper (protoplasmic) pole of the embryo, and get between, and even into, the blastomeres. They are easily distinguished from the blastomeres by their size and pyriform shape, and their vacuolated protoplasm for some time; but in the end these two sets of cells become exactly alike, and take an equal part in the formation of the cyathozoid. Therefore we have in *Pyrosoma* non-fertilised elements, the kalymocytes, uniting with the blastomeres, the derivatives of the fertilized ovum, and becoming formative elements.

In *Salpa*, SALENSKY has shown that the kalymocytes play the most important part in development, while the blastomeres are of secondary importance. Investigations into the development of Compound Ascidians show that it is in that group that the beginning of that remarkable new function of the kalymocytes is to be found. The kalymocytes of the Compound Ascidians take as yet no actual part in the formation of the embryo, but otherwise they behave towards the blastomeres in the same way that the kalymocytes of *Pyrosoma* do. They penetrate between the blastomeres, and remain there for some time, though taking no part in the development of the embryo.

In regard to the germ-layers and mesoderm, the blastomeres first differentiate into an epiblast layer (which afterwards gives rise to the atrial tubes and the nervous system), and a lower meso-endodermal mass which afterwards splits into a many-layered mesoderm and a one-layered endoderm. The coelomic spaces appear as several lacuna-like cavities, which eventually convert the mesoderm into two coelomic sacs, lying one at each side of the longitudinal axis of the germinal disc. These sacs open into the enteric cavity between the germinal disc and the upper surface of the yolk. The relations between these cavities are the same as those described by Van Beneden and Julin. There is a median longitudinal ridge projecting into the upper wall of the enteric cavity and traversed by a canal, which is probably the representative of the notochord. This is a transitory structure and only lasts a short time. The coelomic sacs of *Pyrosoma* have at first many layered walls, while in

Ascidians they are one-layered and epithelium-like; but in *Pyrosoma* they become one-layered later on. The left coelomic sac increases greatly in size and forms a large cavity, while the right sac loses its cavity and forms a solid mass of cells which are afterwards dispersed through the body of the cyathozoid. The large left coelomic sac subdivides into two parts, a proximal axial part under the endostyle, which gives rise to muscles, elæoblast, reproductive organs, &c., and a distal portion which becomes the pericardial tube and the heart. The chief conclusions are :—

1. The ovum of *Pyrosoma* is meroblastic.
2. The embryo (cyathozoid) is formed from both fertilized (blastomeres) and unfertilized (kalmocytes) elements.
3. The blastomeres first divide into ectoderm and meso-endoderm, then the latter divides into multilaminar mesoderm and unilaminar endoderm.
4. The mesoderm first appears in form of two typical coelomic sacs, of which one alone undergoes further development.
5. The ectoderm forms the nerve ganglion, as a thickening, and two pericardial cavities, as invaginations, which grow forwards and backwards, and later unite with the independent cloacal aperture.

PHYSIOLOGY, METHODS, &c.

SLUITER (13) describes seven out of the thirty-six species of Simple Ascidians he finds in the Java seas as living free in mud and able to move about.

In his paper (7) on the methods used at the Naples Zoological Station for the preservation of marine animals, LO BIANCO devotes three pages to the *Tunicata*, and gives an account of the reagents and mode of treatment found to give the best results with the various genera.

LAHILLE (8) specially recommends for Compound Ascidians paralyzing them when fully expanded in sea-water with chlorohydrate of cocaine, fixing with glacial acetic acid, and then preserving in various strengths of alcohol. He has some interesting observations and experiments on the alternation in the contraction of the heart and course of the circulation in living *Tunicata*.

GEOGRAPHICAL DISTRIBUTION.

SLUITER (13) describes thirty-six species of Simple Ascidians from the neighbourhood of Java. They belong to eight genera, and ten of the species are new to science.

HERDMAN (7) discusses the distribution of the species of *Ecteinascidia*.

LAHILLE (8) gives information in regard to the geographical distribution of the French *Tunicata*, and especially the Ascidian fauna of Banyuls-sur-Mer, where, besides many Simple and Compound Ascidians, the following pelagic forms are found :—*Cyclosalpa pinnata*, *Salpa*

maxima, *Pegea confederata*, *Thalia democratica*, *Pyrosoma elegans*, *Doliolum mulleri*, and *D. ehrenbergi*.

HÆCKEL (5) discusses briefly the pelagic *Tunicata* which enter into the formation of "Plankton."

SYSTEMATIC.

LAHILLE (8) elaborates in detail, with full descriptions of most of the groups, the system of classification which he had announced in previous papers (see this Record for 1887, *Tun.* 3). His scheme is as follows :—

Classes.	Orders.	Suborders.	Families.
ATREMATA	- <i>Archipneusta</i>	- { <i>Kowalevskiadæ</i> - <i>Kowalevskiadæ</i> . <i>Appendiculariadæ</i> - <i>Appendiculariadæ</i> .	
HEMITREMATA	<i>Syringobranchiata</i>	- - - - - { <i>Salpidæ</i> . <i>Octacnemidæ</i> . <i>Doliolidæ</i> . <i>Pyrosomidæ</i> . <i>Didemnidæ</i> . <i>Distomidæ</i> .	
EUTREMATA	{ <i>Aplousobranchiata</i>	{ <i>Didemniadæ</i> - - - { <i>Polyclinidæ</i> . <i>Aplididæ</i> .	
		{ <i>Polyclinidæ</i> - - - { <i>Aplididæ</i> .	
	{ <i>Phlebobranchiata</i>	{ <i>Cionidæ</i> - - - <i>Cionidæ</i> . <i>Ascididæ</i> - - - { <i>Ascididæ</i> . <i>Corellidæ</i> . <i>Corynascididæ</i> .	
		{ <i>Stolidobranchiata</i>	
		{ <i>Cynthiadæ</i> - - - { <i>Botryllidæ</i> . <i>Styelidæ</i> . <i>Cynthiidæ</i> . <i>Eugyridæ</i> . <i>Molgulidæ</i> .	

He discusses the classificatory position of most of the French *Tunicata*, and the anatomical and specific characters of some of the groups, especially of the Compound Ascidians. He does not deal in detail with the *Appendicularidæ*, the *Cynthiidæ*, and the *Molgulidæ*, and some of the smaller groups.

ASCIDIACEA.

ASCIDIÆ SIMPLICES.

Fam. CYNTHIIDÆ.

Cynthia jacatrensis, n. sp., SLUITER, (13) p. 331.

Styela perforata, n. sp., *id.* t. c. p. 334.

Styela traustedti, n. sp., *id.* t. c. p. 336.

Styela psoloessa, n. sp., *id. t. c.* p. 337.

Styela aurita, n. sp., *id. t. c.* p. 338.

Styela argentata, n. sp., *id. t. c.* p. 340.

Styela olitoria, n. sp., *id. t. c.* p. 341.

Fam. ASCIDIIDÆ.

Ascidia decemplex, n. sp., SLUITER, (13) p. 343.

Ascidia translucida, n. sp., *id. t. c.* p. 344. [This name is preoccupied, and must be changed.]

Ascidia archaia, n. sp., *id. t. c.* p. 346.

Fam. CLAVELINIDÆ.

A dichotomizing table, showing the diagnostic characters of the genera and species of this family, is given by HERDMAN (7).

✓ *Rhopalopsis*, n. g., HERDMAN (7), p. 148, formed for the reception of the two 'Challenger' species formerly known as *Ecteinascidia crassa* and *E. fusca*.

Perophora banyulensis, n. sp., LAHILLE, (8) p. 283.

Perophoropsis herdmanni, n. sp., *id. t. c.* p. 286.

Clavelina nana, n. sp., *id. t. c.* p. 185.

Ecteinascidia thurstoni, n. sp., HERDMAN, (7) p. 151.

Ecteinascidia moorei, n. sp., *id. t. c.* p. 155.

Rhopalona cerberiana, n. sp., LAHILLE, (8) p. 266.

ASCIDIÆ COMPOSITÆ.

LAHILLE does good service in unravelling the synonymy of some of the French Compound Ascidiæ, such as the species of *Leptoclinum*.

Fam. DIDEMNIDÆ.

Didemnum fallax, n. sp., LAHILLE, (8) p. 80.

Didemnum graphicum, n. sp., *id. t. c.* p. 82.

Fam. POLYCLINIDÆ.

Glossophorum humile, n. sp., LAHILLE, (8) p. 204.

Aplidium griseum, n. sp., *id. t. c.* p. 215.

Aplidium cæruleum, n. sp., *id. t. c.* p. 215.

✓ *Morchelliopsis*, n. subg. of *Circinalium*; *id. t. c.* p. 237.

✓ *Morchelliopsis pleyberianus*, n. sp., *id. t. c.* p. 237. [According to synonymy given, should be *M. punctum*, Giard.]

LARVACEA.

✓ *Oikomicron mikrateton*, n. g. & sp., SWAINSON, (14) p. 18.

MOLLUSCA.

BY

P. CHALMERS MITCHELL, B.A., F.Z.S.

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- I.—INTRODUCTION, p. 1.
 II.—LIST OF PUBLICATIONS, p. 2.
 III.—REFERENCES ; SYSTEMATIC CLASSIFICATION, p. 25.
 IV.—REFERENCES ; SUBJECT-MATTER CLASSIFICATION, p. 64.
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I.—INTRODUCTION.

This year again most of the work is systematic. 14 new living genera and 24 new fossil genera have been recorded, and 433 new species and 431 new fossil species. In the systematic index the extinct species are distinguished by a dagger prefixed.

Among the more important papers may be mentioned the following :—
 BERNARD has an elaborate study of the palpeal sense-organs, and PERRIER a monograph on the kidney of Prosobranchiata. WHITELEGGE writes on the oyster disease in New South Wales. KOWALEVSKY & MARION have published a most valuable monograph on the *Aplacophora*. JACKSON has an interesting theory of pelecypod phylogeny, and GIARD of the relations between Annelida, Mollusca, and other Invertebrata. In GULICK's paper on divergent evolution, and HYATT's on the genesis of the *Arietidae*, is much bearing on general morphological theory.

Cephalopoda : *Todaropsis*, new genus ; *Huddlestonia*, new fossil genus.

Gasteropoda Pulmonata : *Atoxon*, *Buettneria*, *Phaneropus*, *Trichotoxon*, *Leonardia*, new genera ; *Acroria*, new fossil genus.

Gasteropoda Opisthobranchiata : *Phialodoris*, new genus.

Gasteropoda Nucleobranchiata : *Eoatlanta*, new fossil genus.

Gasteropoda Prosobranchiata : *Nassopsis*, *Pseudogibbula*, *Blaesospira*, *Xenopoma*, *Sabinella*, *Clydonochilus*, new genera ; *Amblyacrum*, *Latirofusus*, *Streptochetus*, *Suessonia*, *Trachelochetus*, *Morionassa*, *Fulgurofiscus*, *Ischnodactylus*, *Alocaxis*, *Orthochetus*, *Trypanaxis*, *Pseudonerinea*, *Aizyella*, new fossil genera.

Aplacophora : *Lepidomenia*, new genus.

Lamellibranchiata : *Ischyriodonta*, *Whitella*, *Mokuttamia*, *Anodontopleura*, *Cryptocaulia*, *Petalodontia*, *Stenopleura*, *Simacia*, new fossil genera.

II.—LIST OF PUBLICATIONS.*

- ADAMS, L. E. (1) Deep Limpet "Sears." *Naturalist*, 1890, p. 335.
 —. (2) Derbyshire from a Conchological point of view, *J. of Conch.* vi, pp. 243-249.
 —. (3) *Helix lamellata* at Stafford. *T. c.* p. 254.
 —. (4) *Zonites glaber*, var. *viridula* at Penistone. *T. c.* p. 265.
 —. (5) A few Notes on the Eastern Counties. *T. c.* p. 277.
- AMBRONN, H. Cellulose-Reaction bei Arthropoden und Mollusken: *MT. z. Stat. Neap.* ix, pp. 475-478.
 Cellulose found in *Sepia*, *Loligo*, the radula of *Helix*, &c.
- ANON. Les Mollusques de la Province de Quebec. *Nat. Canad.* xix, pp. 184-189 & 203-205.
- AUCLAIR, M. Coquilles terrestres et fluviatiles de l'Allier. *Rev. Sci. Bourb.* 1890, pp. 9-19, 157-163, 181-190, 232-242, & 256-263, pl. i, and an alphabetical table, pp. 263 & 264. Supplement, pp. 277-280.
- BAKER, F. C. On the Modifications of the Apex in *Murex*. *P. Ac. Philad.* 1890, pp. 66-69, with woodcuts.
- BALLÉ, E. (1) Note sur une Coquille (*Helix nemoralis*, L.) à péristome anomal. *Bull. Soc. Rouen*, 1890, i, pp. 17 & 18.
 —. (2) Sur une Coquille scalaroïde de l'*Helix nemoralis*. *T. c.* p. 33.
- BARROIS, T. Le Stylet Cristallin des Lamellibranches. *Rev. Biol.* ii, pp. 209-229, 299-311, & 351-356, pls. iii-v.
- BASTIDE, E. F. H. Formes Nouvelles d'Ammonites, de Bélemnites, et de *Crioceras*. *C.R. Ass. Fr. Sci.* 1889, ii, pp. 462-466, pls. xi & xii, 4 woodcuts.
- BEECHER, C. E. On the Lingual Dentition and Systematic Position of *Pyrgula*. *J. N. Y. Micr. Soc.* vi, pp. 1-4, pl. xxi.
- BEISHAUSEN, L. Ueber einige Lamellibranchiaten des rheinischen Unterdevons. *JB. k. preuss. geol. Landesanst.* 1889, pp. 212-236, pls. iv & v.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

BELLARDI, L. Molluschi dei Terreni Terziarii del Piemonte e della Liguria. Mem. Acc. Tor. xl, pp. 295-361, 2 pls.

Part vi, *Volutidæ*, *Marginellidæ*, *Columbellidæ*, by SACCO.

BERGH, R. (1) Die Nudibranchien des Sunda-Meeres. Reisen in Archipel der Philippinen von Dr. C. Semper. Th. II. Wissenschaftliche Resultate. Bd. II. Malacologische Untersuchungen von R. Bergh. Pp. 873-991, & lxxxv-lxxxix.

Phialodoris, n. g. of *Dorididæ*, and many new species.

— (2) Report on the results of Dredging, under the supervision of A. Agassiz, in the Gulf of Mexico (1887 & 1888), and in the Caribbean Sea (1879 & 1880) by the U.S. Survey Steamer 'Blake,' Lieut.-Commander C. D. Sigsbee, U.S.N., and Commander J. R. Bartlett, U.S.N., commanding. Bull. Mus. C. Z. xix, pp. 155-181, pls. i-iii.

With several new species.

BERNARD, F. (1) Recherches sur les Organes Paléaux des Gasteropodes Prosobranches. Ann. Sci. Nat. ix, pp. 89-396, pls. v-xv.

Organ of Spengel, pp. 139-263. In the *Bullidæ*, *Aplysiidæ*, and the *Diotocardæ* there is a branchial ganglion innervating the gill and a portion of the mantle more and more feeble as one rises in the scale of the *Prosobranchiata*. In all the types save the *Fissurellidæ* it sends fibres to the epithelium. In the *Neritidæ*, *Tecturidæ*, and *Valvatidæ* there is no longer a branchial ganglion well differentiated, and in the *Monotocardidæ* there is no trace of it. Structure of the gill, pp. 265-296; mucous glands, pp. 296-340; general conclusions, pp. 340-396.

— (2) Recherches sur *Valvata piscinalis*. Bull. Sci. Fr. Belg. xxii, pp. 252-361, pls. xii-xx.

An elaborate monograph on the anatomy and development.

BIGOT, A. Notes sur quelques Pélécypodes des Grès Siluriens de l'ouest de la France. Bull. Soc. Géol. xvii, pp. 790-801, pls. xxii & xxiii.

With several new species.

BINNEY, W. G. A Third Supplement to the Fifth Volume of the Terrestrial Air-breathing Molluscs of the United States and the adjacent territories. Bull. Mus. C. Z. xix, pp. 183-226, pls. i-xi, and many woodcuts.

BITTNER, A. Eine Triadische *Conularia*. Verh. geol. Reichsanst. 1890, p. 1777, with woodcut.

BLANKENHORN, M. (1) Pteropoden-Reste aus der oberen Kreide Nord-Syriens und aus dem Hessischen Oligocän. Z. geol. Ges. xli, pp. 593-602, pl. xxii.

Several new species.

[BLANCKENHORN, M.] (2) Das Eocän in Syrien. Mit besonderer Berücksichtigung Nord-syriens. *T. c.* xlii, pp. 318-359, pls. xvii-xix.

Mollusca, pp. 351-359, with several new species.

— (3) Das marine Miocän in Syrien. Denk. Ak. Wien, lvii, pp. 591-670, 4 woodcuts.

Many lists of shells.

BOETTGER, O. (1) Verzeichniss der Von Herrn E. von Oertzen aus Griechenland und aus Kleinasien mitgebrachter Vertreter der Landschnecken Gattung *Clausilia*, Drp. Abh. Senck. Ges. xvi, pp. 32-68, 1 pl.

— (2) Zur Kenntniss der Land- u. Süsswasser Mollusken von Nossi-Bé. II. Nachr. mal. Ges. 1890, pp. 81-137.

— (3) Zur Mollusken-Fauna russischen Gouvernements Perm und des Gebietes süd-östlich von Orenburg. II. *T. c.* pp. 161-173.

— (4) Ad. Strubell's Konchylien aus Java. I. Ber. Senck. Ges. 1890, pp. 137-173, pls. v & vi.

Freshwater forms, pp. 137-164; brackish and sea-water forms, pp. 165-173.

BORCHERDING, FR. Vier Wochen in Nassau a. d. Lahn. Nachr. mal. Ges. 1890, pp. 65-81.

BOURGUIGNAT, J. R. Histoire Malacologique du Lac Tanganyika, Afrique Equatoriale. Ann. Sci. Nat. x, pp. 1-267, pls. i-xvii.

BOURNE, G. C. Report of a Trawling Cruise in H.M.S. 'Research,' off the S.W. Coast of Ireland. J. Mar. Biol. Ass. (n.s.) i, pp. 306-323.

Mollusca, pp. 312-315.

— (2) The Generative Organs of the Oyster. *T. c.* pp. 268-280, pls. xxii & xxiii.

BOURY, E. DE. Observations sur quelques *Scalidæ* du Bassin de Paris et description d'une Espèce Nouvelle. J. de Conch. xxx, pp. 139-142.

Gyroscala stueri, n. sp., p. 142.

— (2) Étude critique des *Scalidæ* Miocènes et Pliocènes d'Italie. Bull. Soc. Mal. Ital. xv, p. 160.

BOUTAN, L. Le Système Nerveux du *Parmophorus* (*Scutum*) dans ses rapports avec le Manteau, la Collerette (Manteau inférieur) et le Pied. Rev. Biol. ii, pp. 449-478, pls. viii & ix.

BRAZIER, J. *Mollusca* Trawled off Merimbula, New South Wales. P. Linn. Soc. N.S.W. iv, pp. 747-750.

BUCKMAN, S. S. A Monograph on the Inferior Oolite Ammonites of the British Islands. Pal. Soc. xlv, pp. 225-256, pls. xxxvii-xliv.

Huddlestonia, n. g.

BUCQUOY, M. Mollusques terrestres du Roussillon. Bull. Soc. Nancy, x, fasc. 24, pp. 56-93, 3 pls.

BURROWS, T. F. Re-discovery of *Helix fusca* and *H. lamellata* in North Staffordshire. J. of Conch. vi, p. 254.

BUXBAUM, GEBRÜDER. Das Wachsen der Anodonten (Teichmuscheln). Zool. Gart. xxxi, pp. 16-18.

On the rate of growth of Anodons.

BYNE, L. ST. G. *Adeorbis subcarinatus* at Teignmouth, S. Devon. J. of Conch. vi, p. 164.

CALVIN, S. Some New Species of Palæozoic Fossils. Bull. Lab. Iowa, i, pp. 173-181, 3 pls.

CANEFFRI, C. T. Viaggio di Leonardo Fea in Birmania e Regioni vicini. XVIII. Molluschi terrestri e d'Acqua dolce. Ann. Mus. Genov. vii, pp. 295-359, pls. vii-ix.

Leonardia, n. g. of *Veronicellida*, and several new species.

CARUANA-GATTO, A. Beschreibung einer neuen *Alexia*. Nachr. mal. Ges. 1890, p. 210.

A. kobelti, n. sp., from Marsa-Scirocca.

COCKERELL, T. D. A. (1) The British Naturalists' Catalogue of the Land and Freshwater *Mollusca* of the British Isles, with all the named varieties. London (Swan, Sonnenschein & Co.): 1890, 19 pp.

— (2) The American *Mollusca*. Sci. Goss. 1890, p. 114.

Zonites carolinensis, n. sp., from America.

— (3) The Variation and Abnormal Development of the *Mollusca*. T. c. pp. 4 & 5.

— (4) Notes on Slugs, chiefly in the Collection at the British Museum. Ann. N. H. vi, pp. 277-288. With a table of species relations. T. c. pp. 380-390.

Several new species.

— (5) Colorado *Mollusca*. J. of Conch. vi, p. 175.

— (6) Critical Notes on some Land and Freshwater *Mollusca*. T. c. pp. 255-259.

— (7) A List of *Mollusca* of Colorado. Naut. iii, p. 99.

Land *Mollusca*.

COLLIN, A., & KOBELT, W. Bericht ueber die wissenschaftlichen Leistungen im Gebiete der Malakologie während des Jahres 1887. Arch. f. Nat. 1888, ii, pp. 257-330.

COLLINGE, W. E. (1) On the Position of the Dart-Sac in *Helix rufescens*. Zool. 1890, p. 276.

Has a double bi-lobed sac ; two lobes on each side of the vagina ; the darts are so small that the animal cannot use them. It is suggested that the darts in *Helix* are retrograde organs of defence.

— (2) Observations on *Vitrina pellucida*. T. c. pp. 467 & 468.

Notes on the habits and distribution.

- [COLLIDGE, W. E.] (3) Note on a Tumour in *Anodonta cygnea*. J. Anat. Phys. xxv, p. 154.
- (4) Description of a New Variety of *Limax flavus*, Linn. Zool. 1890, p. 145.
- Var. *lineolata*, from Banbury.
- (5) The Land and Freshwater *Mollusca* of Ingleton, Clapham, and District. Naturalist, 1890, pp. 109–114.
- (6) *Arion subfuscus*, Drap., at Ingleton. T. c. p. 198.
- (7) Additions to the Malham List of *Mollusca*. T. c. p. 335.
- (8) *Helix pisana* in Oxfordshire. Sci. Goss. 1890, p. 97.
- COOPER, J. G. Freshwater *Mollusca* of San Francisco County. Zoe, i, pp. 196 & 197.
- COX, J. C. Descriptions of two New Species of Australian *Mollusca*. P. Linn. Soc. N.S.W. iv, pp. 658–660, pl. xix.
- COSSMANN, M. Catalogue illustré des Coquilles Fossiles de l'Éocène des Environs de Paris. Ann. Soc. Mal. Belg. xxiv, pp. 3–381, pls. i–xii.
- Aizyella*, n. g., p. 3; type, *Phasianella perawalensis*: *Orthochetus*, n. g., p. 59; type, *Cerithium leufroyi*: *Alocaxis*, n. g., p. 59; type, *Cerithium cylindraceum*: *Trypanaxis*, n. g., p. 60; type, *Cerithium umbilicatum*: *Ischnodactylus*, n. g., p. 83 (*Chenopidae*): *Suessonia*, n. g. of *Buccinidae*, p. 157: *Streptochetus*, n. g. of *Fasciolaridae*, p. 170: *Latirofuscus*, n. g. of *Fasciolaridae*, p. 175: *Trachelochetus*, n. g. of *Cassidae*, p. 250: *Amblyacrum*, n. g. of *Corvidae*, p. 291: *Eoatlanta*, n. g. of *Atlantidae*, p. 297: *Aeroria*, n. g. of *Gadiniidae*, p. 380: and many new species.
- CRAWSHAW, C. The Money Cowry on the Coast of Cumberland. Naturalist, 1890, p. 324.
- CROSSE, H. (1) Faune Malacologique terrestre et fluviatile de l'île de la Trinité (Antilles). J. de Conch. (3) xxx, pp. 35–65.
- (2) Faune Malacologique terrestre et fluviatile de l'île de Cuba. T. c. pp. 173–335.
- Bluesospira*, n. g.; type, *Cyclostoma echinus*, Wright, p. 281. *Xenopoma*, n. g.; type, *Choanopoma hystrix*, Wright, p. 282.
- CROSSE & FISCHER. (1) Mollusques marins de la Baie d'Halong (Tonkin). T. c. xxx, pp. 14–19.
- & —. (2) Diagnoses Ampullarium novarum Guatemalæ et republicæ Mexicanæ incolarum. T. c. pp. 110–114.
- & —. (3) Note sur l'Épiderme hispide des jeunes *Ampullaria*. T. c. pp. 114 & 115, pl. iii.
- & —. (4) Note complémentaire sur le *Natica funiculata*, Recluz de l'Annam. T. c. p. 119.
- & —. (5) Note sur l'*Helix sepulchralis* de Férussac et sur quelques espèces voisins du groupe des *Ampelita*. T. c. pp. 122–129.

- CROUCH, W. On the Land and Freshwater *Mollusca* collected in Wanstead and the neighbouring districts in the Becontree Hundred of Essex. Tr. Ess. Club, iv, pp. 202-211.
- CUÉNOT, L. (1) Le Sang et la Glande Lymphatique des Aplysies. C.R. ex, pp. 724 & 725.
- . (2) Sur la Glande de l'Oreillette du *Paludina vivipara* et la Glande Nephridienne du *Murex brandaris*. T. c. pp. 1275-1277.
- CUNDALL, J. W. Tenby Shells. J. of Conch. vi, p. 250.
- DALL, W. H. (1) Contributions to the Tertiary Fauna of Florida, with special reference to the Miocene Silex Beds of Tampa and the Pliocene Beds of the Caloosahatchie River. Tr. Wagner Inst. iii, pp. 1-178, 12 pls., & index.
- Part I. Pulmonate Opisthobranchiate and Orthodont Gastropods, with 87 new species.
- . (2) Preliminary Report on the Collection of *Mollusca* and *Brachiopoda* obtained in 1887-88. VII. Scientific Results of Explorations by the U.S. Fish. Commission Steamer 'Albatross.' P. U. S. Nat. Mus. xii, pp. 219-362, pls. v-xiv.
- Pelecypoda*, pp. 232-297; *Scaphopoda*, pp. 293-295; *Gastropoda*, p. 295.
- . (3) Deep Sea Mollusks and the Conditions under which they Exist. P. Biol. Soc. Washington, v, pp. 1-22.
- . (4) Noto *Crepidula glauca*, Say. Naut. iii, p. 98.
- . (5) On a New Species of *Tylodina*. T. c. p. 121.
- T. americana*, n. sp.
- DAUTZENBERG, P. Mollusques recueillis au Congo par M. E. Dupont entre l'embouchure du fleuve et le confluent du Kassai. Bull. Ac. Belg. xx, pp. 566-579, pls. i-iii.
- Pseudogibbula*, n. g. of *Littorinidae*.
- DAVIS, J. P. A. Report of the Yorkshire Marine Zoology Committee. Naturalist, 1890, pp. 3 & 4.
- DELAP, A. H. *Helix lamellata* in Ireland. Sci. Goss. 1890, p. 262.
- DOUVILLÉ, H. Sur la Classification des *Ceratiles* de la Craie. Bull. Soc. Géol. xviii, pp. 275-297, with several woodcuts.
- DUPONT, E. Sur les Mollusques vivants et post pliocenes recueillis au cours d'un voyage au Congo in 1887. Bull. Ac. Belg. xx, pp. 559-566.
- EBERT, HERR. Ueber *Pectunculopsis moguntina*, n. subg. & sp. SB. nat. Fr. 1890, pp. 25 & 26, woodcut.
- EVANS, W. *Clausilia rugosa* and *Balea perversa* in Haddingtonshire. J. of Conch. vi, p. 176.

ETHERIDGE, R. Descriptions of Upper Silurian Fossils from the Lily Dale Limestones, Upper Yara District, Victoria. Rep. Aus. Mus. i, pp. 60-67.

Mollusca, pp. 62-67, with new species.

EUDES-DESLONGCHAMPS. Rapport sur les Fossiles de la Collection Sarry. Bull. Soc. L. Norm. (4) iii, pp. 75 & 92-167, pl. i.

A report on a collection of fossils from the Oxford and Kimmeridge Clays near Trouville.

FAURE, C. Note Malacologique. Soc. Agric. Pyrén.-orient. xxxi, pp. 175-177.

On the presence of *Acme fusca* in the Pyrénées-Orientales.

FALLOON, B. J. (1) *Pupa ringens* in Pembrokeshire. J. of Conch. vi, p. 264.

— (2) *Otina otis*, var. *candida*, in Pembrokeshire. T. c. p. 265.

FELIX, J. Versteinerungen aus der mexicanischen Jura- und Kreide-Formation. Palæontogr. xxxvii, pp. 140-199, pls. xxii-xxx.

Mollusca, pp. 163-172 & 176-189, with many new species, and *Anodontopleura*, n. g.

FIERKE, F. W. Notes on the Discovery of *Limnæa glutinosa* near Hull. J. of Conch. vi, pp. 251-253.

FISCHER, P. (1 & 2) Observations sur les Genres *Mycetopus* et *Solenais*. J. de Conch. xxx, pp. 1-14 & 93-96.

— (3) Note sur la Faune Conchyliologique terrestre et fluviatile de l'Île d'Hainan (Chine). T. c. pp. 96-100.

A list of the species, with notes.

— (4) Description d'un Nouveau Genre de Gastropodes marins. T. c. pp. 115-118.

Clydonochilus, n. g. of *Trochidae*. *C. mariei*, n. sp., from Mayote (Comoros Archipelago).

— (5) Note sur le Genre *Ammonoceras*, Lamarck. T. c. pp. 130-138.

— (6) Observations sur la Synonymie et l'Habitat du *Gastropteron rubrum*, Rafinesque. T. c. pp. 349-353.

— (7) Diagnoses d'Espèces Nouvelles recueillis, à l'état subfossile, dans le Sahara, près de El Goléah. T. c. pp. 374-376.

FISCHER, P., & BOUVIER, E. L. Sur l'Organisation des Gasteropodes Prosobranches sénestres (*Neptunea contraria*, Linné). C.R. cx, pp. 419-414.

FOERSTE, A. F. Notes on Clinton Group Fossils, with special reference to collections from Indiana, Tennessee, and Georgia. P. Bost. Soc. xxiv, pp. 263-355, pls. iv-ix.

With many new species.

- FOORD, A. H. (1) Notes on the Palæontology of Western Australia. Geol. Mag. 1890, pp. 145-155, pls. vi & vii.
Mollusca, pp. 154 & 155.
- . (2) A Revision of the Group of *Nautilus elegans*, Sowerby. *T. c.* pp. 542-552, with woodcuts.
- FOORD, A. H., & CRICK, G. C. (1) On the Muscular Impressions of some Species of Carboniferous and Jurassic Nautiloids compared with those of the Recent *Nautilus*. *Ann. N. H.* v, pp. 220-224, woodcuts.
- & ——. (2) Descriptions of New and Imperfectly Described Species of Jurassic *Nautili* contained in the British Museum (Natural History). *T. c.* pp. 265-291, woodcuts.
- & ——. (3) Descriptions of some New and Imperfectly Defined Species of Jurassic, Cretaceous, and Tertiary *Nautili* contained in the British Museum (Natural History). *T. c.* pp. 388-409, woodcuts.
- FOORD, A. H., & WOODWARD, H. Notes on the Fossils of Western Australia. Introduction by Dr. WOODWARD. Descriptions of Fossils from the Kimberley District, Western Australia. Geol. Mag. 1890, pp. 97-105, pls. iv & v.
Pteropoda, p. 98. *Cephalopoda*, pp. 102 & 104. *Lamellibranchiata*, pp. 103 & 104. *Gasteropoda*, p. 104.
- FORD, J. (1) Description of a New Species of *Helix*. *P. Ac. Philad.* 1890, p. 188.
- . (2) Description of a New Species of *Anctus*. *Naut.* x, p. 81.
A. pilsbryi, n. sp.
- FOWLER, G. H. Notes on Oyster Culture. *J. Mar. Biol. Ass. (n.s.)* i, pp. 257-267, pl. xxi.
 Notes on oyster farming in Holland, and on recent legislation relating to oyster culture in England.
- FRENCH, S. On the Occurrence of *Cyclostoma elegans* in a living state at Felstead. *Tr. Ess. Club*, iv, pp. 92-94.
- FRIEDEL, E. (1) Tauben als Schnecken-Vertilger. *Nachr. mal. Ges.* 1890, p. 195.
- . (2) Neue Fundstellen von *Lithoglyphus naticoides*. *T. c.* p. 196.
- GAIN, W. A. *Arion ater*, Colour of Eggs and Young. *Sci. Goss.* 1890, p. 45.
- GARNAULT, P. (1) La Castration Parasitaire chez *Helix aspersa*. *Bull. Sci. Fr. Belg.* xx, pp. 137-141, pl. ii.
- . (2) Les Organes Reproducteurs de la *Valvata piscinalis*. *Op. cit.* xxii, pp. 496-507, pl. xxvi.
- GARSTANG, W. A Complete List of the Opisthobranchiate *Mollusca* found at Plymouth, with further observations on their Morphology, Colours, and Natural History. *J. Mar. Biol. Ass. (n.s.)* i, pp. 399-457, pls. xxvii & xxviii.

GIARD, A. Sur la Parenté des Annélides et des Mollusques. C.R. cx, pp. 90-93.

Suggests a Phylum *Gymnotoca* :—

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|------------------|---|--|
| <i>Gymnotoca</i> | { | 1. <i>Mollusca</i> .
2. <i>Annelida</i> .
3. <i>Brachiopoda</i> .
4. <i>Ciliata, Rotifera, Gasterotricha, Bryozoa</i> . |
|------------------|---|--|

GIOLI, G. Fossili della Oolite inferiore di San Vigilio e di Monte Grappo. Mem. Soc. Tosc. x, pp. 3-18, pl. i.

GIRARD, A. A. Nota sobre os Cephalopodes de Portugal. J. Sci. Lisb. (2 series) i, pp. 200-205.

With a list of the Cephalopods of Portugal, and *Todaropsis*, n. g., *T. veranyi*, n. sp.

GODWIN-AUSTEN, H. H. On supposed New Species of Land *Mollusca* from Borneo, belonging to the Genera *Opisthostoma* and *Diplommatina*. Ann. N. H. vi, pp. 244-246, pl. vii.

GOURRET, PAUL. Nouvelle contribution à la Faune pélagique du Golfe de Marseille. Arch. Biol. x, pp. 311-325.

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— (11) Description of a New Japanese *Scalpellum*. *T. c.* pp. 441–443, woodcut.

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Mollusca ; LANKESTER.

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 Revision of British *Mollusca* ; NORMAN (1).
Mollusca : list of British forms ; COCKERELL (1).
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Mollusca in captivity : WATERS.
 Edible *Mollusca* ; LOCARD (1).
 †*Mollusca* : fossil forms from Japan ; NAUMANN & NEUMAYR.
Mollusca : parentage ; GIARD.
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- †*Ammonites* : new forms ; BASTIDE.
- †*Ammonites* : structure ; NIKITIN.

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- †*Goniatites* from W. Australia, p. 102, pl. v, figs. 4 & 5 ; FOORD (1).

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- †*Phylloceras ezoëense*, n. sp., p. 178, pl. xix, figs. 2a, b, c ; YOKOYAMA.
- †*P. kudernatschi* ; HAUER, p. 387, fig. 1, pl. ii. †*P. flabellum*, p. 388, fig. 2, pl. ii ; JÜSSEN.
- †*Phylloceras mediterraneum* : peristome ; HAUG.

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- †*Ancyloceras rasgradi*, n. sp., p. 338, pl. i, fig. 8 ; TOULA. †*A. welhuæ*, n. sp., p. 189, pl. xxviii, fig. 19 ; FELIX.
- †*Anisoceras haradanum*, n. sp., p. 182, pl. xx, fig. 5. †*A. subquadratum*, n. sp., p. 182, pl. xx, fig. 4. †*A. subundulatum*, n. sp., p. 183, pl. xx, figs. 6, 7, & 7a ; YOKOYAMA.
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- †*Cosmoceras*, n. sp. ; SIEMIRADZKI (1) p. 171. *C. lithuanicum*, n. sp. ; *id.* p. 172. *C. grewingki*, n. sp. ; *id.* p. 173.
- †*Crioceras edouardi*, n. sp., from Cretaceous, p. 462, pl. xi ; BASTIDE.
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†*Ptychoceras pseudo-gaultinum*, n. sp., p. 181, pl. xx, figs. 1, 2, 2a, & 3 ; YOKOYAMA.

†*Stephanoceras paucicostatus*, n. sp., p. 180, pl. xxvii, figs. 17 & 17a ; FELIX.

AMMONITIDÆ.

†*Ammonites bathildæ*, n. sp., p. 464, pl. xii, from Cretaceous ; BASTIDE.
†*A. fontinalis*, n. sp., p. 241, pl. ix, fig. 1 ; HUDDLESTON.

†*Arietidæ* : genesis, system, &c. ; HYATT.

†*Dumortieria prisca*, n. sp., p. 236, pl. xxxvii, figs. 9-11 ; BUCKMAN.

↓†*Huddlestonia*, n. g., p. 225 ; *id.*

CERATITIDÆ.

†*Ammonites* : classification of *Ceratiles* of Chalk ; DOUVILLÉ.

CEPHALOPODA TETRABRANCHIATA.

I

NAUTILIDÆ.

†*Cyrtoceras manitobense*, n. sp., p. 80, pl. xiii, figs. 3 & 4, pl. xv, fig. 4 ; WHITEAVES.

†*Discites* from W. Australia ; FOORD (1).

†*Nautilus clausus*, p. 285, fig. 14 ; †*N. perinflatus*, n. sp., p. 286, fig. 15 ;
†*N. smithi*, n. sp., p. 287, fig. 16 ; †*N. burtonensis*, n. sp., p. 288, fig. 17 ;
†*N. calloviensis*, p. 290, fig. 18 ; FOORD & CRICK (2). †*N. elegans*, p. 547,
fig. 1 ; †*N. elegantoides*, p. 549, fig. 2 ; †*N. atlas*, p. 550 ; †*N. pseudoelegans*,
p. 551, fig. 3 ; FOORD (2). †*N. elegans* : revision of group ; *id.* †*N. hun-*
stantonensis, n. sp., p. 401, figs. 4 & 5 ; †*N. triangularis*, p. 403 ; †*N. liba-*
noticus, n. sp., p. 404, fig. 6 ; †*N. bayfieldi*, n. sp., p. 405, fig. 7 ; †*N.*
(Hercoglossa) danicus, p. 407, fig. 8 ; †*N. (H.) cassinianus*, n. sp., p. 409,
fig. 9 ; †*N. lineolatus*, n. sp., p. 393 ; †*N. (H.) aganiticus*, p. 394, fig. 1 ;
†*N. (H.) franconicus*, p. 395, fig. 2 ; †*N. (H.) portlandicus*, n. sp., p. 397,
fig. 3 ; FOORD & CRICK (3). †*N. ornatus*, n. sp., p. 273, fig. 7 ; †*N. lineatus*,
p. 275, fig. 8 ; †*N. pseudolineatus*, n. sp., p. 277, fig. 9 ; †*N. glaber*, n. sp.,
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†*N. multiseptatus*, n. sp., p. 283, fig. 13 ; *iid.* (2). †*N. simillimus*, n. sp.,
p. 267, fig. 1 ; †*N. jourdani*, p. 267, fig. 2 ; †*N. terebratus*, p. 269, fig. 3 ;
†*N. robustus*, n. sp., p. 271, fig. 5 ; †*N. fischeranus*, n. sp., p. 272, fig. 5 ;
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- +*Nautilus*, n. sp., with fig., Jurassic; FOORD & CRICK (1).
Nautilus polygonalis: muscular impressions, with fig.; *id.* (1).
Nautilus: respiratory organs, with figs.; JOUBIN.
 +*Oncoceras magnum*, n. sp., p. 79, pl. xv, fig. 1; +*O. gibbosum*, n. sp., p. 80, pl. xv, figs. 2 & 3; WHITEAVES.
 +*Orthoceras*, p. 102, pl. iv, fig. 3; FOORD (1).
 +*Orthoceras*, from W. Australia; *id.* (1).
 +*Orthoceras (Actinoceras) daytonensis*, n. sp., p. 286, pl. viii, fig. 6; +*O. (A.) youngi*, n. sp., p. 284, pl. viii, fig. 3; +*O. (A.) latanunmulatus*, n. sp., p. 285, pl. viii, fig. 4; +*O. (A.) turgidanunmulatus*, n. sp., p. 285, pl. viii, fig. 7; FOERSTE. +*O. (Cycloceras) novacarlislensis*, n. sp., p. 281, pl. v, fig. 25, pl. viii, fig. 1; *id.* +*O. (Euorthoceras?) ignotum*, n. sp., p. 279, pl. vii, fig. 4; +*O. (E.?) rhythmoides*, n. sp., p. 279, pl. viii, fig. 5; +*O. (E.?) hanoverensis*, n. sp., p. 280, pl. vi, fig. 6; *id.* (1).
 +*Orthoceras (Kionoceras) crawfordi*, n. sp., p. 284, pl. v, fig. 26; *id.* (1).
 +*Poterioceras nobile*, n. sp., p. 77, pl. xiv, fig. 1; +*P. apertum*, n. sp., pl. xiv, figs. 2-4; WHITEAVES.
 +*Solenocheilus latiseptatus*, with fig., muscular impressions; FOORD & CRICK (1).
 +*Trochoceras Mc charlesi*, n. sp., p. 81, pl. xvi; WHITEAVES.

PTEROPODA.

General.

- Pteropoda* from Cambrian of W. Australia; FOORD (1).
 Pteropods from St. Helena: SMITH (7).
 +*Salterella curvatus*, n. sp., p. 34, pl. ii, fig. 27; SHALER & FOERSTE.
 +*Tentaculites cretaceus*, n. sp., p. 600, pl. xxii, figs. 8 & 9; BLANCKENHORN (1).

CONULARIIDÆ.

- +*Conularia* sp., p. 774, pl. xix, fig. 6; OEHLERT.
 +*Conularia triadica*, n. sp., from Trias, near Vienna; BITTNER.

CAVOLINIIDÆ.

- +*Balantidium flabelliforme*, n. sp., p. 598, pl. xxii, figs. 1 & 16; +*B. amphoroides*, n. sp., p. 598, pl. xxii, fig. 2; BLANCKENHORN (1).
 +*Vaginella labiata*, n. sp., p. 598, pl. xxii, figs. 3a & 3b; +*V. rotundata*, n. sp., p. 599, pl. xxii, figs. 4a & 4b; *id.* (1).

HYOLITHIDÆ.

- † *Hyolithus acutus*, p. 767, pl. xxx, from the Under Silurian ; REMELÉ.
 † *H. quadricostatus*, n. sp., p. 31, pl. ii, fig. 15 ; SHALER & FOERSTE.

GASTEROPODA.

General.

- Gastropods : faculty of homing ; KEW.
Gasteropoda : pericardial gland, with figs. ; GROBBEN.
Gasteropoda Prosobranchiata : structure ; FISCHER & BOUVIER.
 † *Gasteropoda* : type fossils in Bristol Museum, pp. 369-371 & 414 ;
 WILSON, E.
 † *Gasteropoda* : track of a Gastropod Mollusc in the Carboniferous of
 Rhode I. ; PACKARD.

GASTEROPODA PULMONATA.

TESTACELLIDÆ.

- Aërope beyrichi*, n. sp., p. 85, from Pondoland ; MARTENS (2).
Aërope caffra : anatomy, with figs. ; PILSBRY (8).
 † *Ammonoceras* (Lamarck) ; FISCHER (5).
Daudebardia rufa : anatomy : PLATE.
Cystopelta : anatomy ; suggested affinity with *Helicarion* ; HEDLEY (2).
Ennea ænigmatica, n. sp., p. 164, pl. vii, fig. 11 ; *E. soror*, n. sp., p. 164,
 pl. vi, fig. 12 ; *E. subhyalina*, n. sp., p. 165, pl. vi, fig. 13 ; *E. subflavescens*,
 n. sp., p. 165, pl. vi, fig. 14 ; *E. amicta*, n. sp., p. 165, pl. vi, fig. 15 ; *E.*
lendia, n. sp., p. 166, pl. vi, fig. 16 ; *E. microstoma*, n. sp., p. 166, pl. vi,
 fig. 17 ; *E. peculiaris*, n. sp., p. 167, pl. vi, fig. 18 : from S. Africa ;
 SMITH (6). *E. (Diaphora) eutrachela*, n. sp., p. 192, pl. vii, fig. 3 ; *E. (D.)*
devians, n. sp., p. 193, pl. vii, fig. 4, from Cebu ; MÖLLENDORFF (1).
E. hanningtoni, n. sp., p. 161, pl. vi, fig. 4 ; *E. newtoni*, n. sp., p. 161,
 pl. vi, fig. 5 ; *E. fortidentata*, n. sp., p. 162, pl. vi, fig. 6 ; *E. consanguinea*,
 n. sp., p. 162, pl. vi, fig. 7 ; *E. curvilamella*, n. sp., p. 163, pl. vi, fig. 8 ;
E. consociata, n. sp., p. 163, pl. vi, fig. 9 ; *E. æquidentata*, n. sp., p. 163,
 pl. vi, fig. 10 : from S. Africa ; SMITH (6).
Gibbus (Gonidomus) breviculus, n. sp., p. 161, pl. vi, fig. 3, from S.
 Africa ; *id.* (6).
Glandina : catalogue of Cuba forms, pp. 173-179 ; CROSSE (2).
Streptaxis mamboiensis, n. sp., p. 110, pl. vi, fig. 1 ; *S. ordinarius*, n. sp.,
 p. 160, pl. vi, figs. 2 & 2a : from S. Africa ; SMITH (6).

Streptostele horei, n. sp., p. 95 ; *S. simplex*, n. sp., p. 96 : Central Africa ; SMITH (5).

Streptostyla from Cuba : list, p. 179 ; CROSSE (2).

Testacella maugei compared with *T. haliotideae* ; POLLONERA (5).

LIMACIDÆ.

Amalia gracilis in Italy ; POLLONERA (3). *A. pallidula*, n. subsp. ; COCKERELL (4).

Agriolimax oertzeni, n. sp., p. 17, figs. 3, 11, 12, & 13, Greece ; SIMROTH (3).

Notes on slugs, with *Agriolimax costaricensis*, n. subsp., p. 279, and *Amalia pallidula*, n. subsp., p. 286 ; COCKERELL (4).

Atoxon, n. g. ; *A. hildebrandti*, n. sp., p. 58, pl. iii, fig. 14 ; *A. schulzei*, n. sp., p. 58, pl. iii, figs. 1 & 15 ; *id.* (2).

Bensonia radulella, n. sp., from Philippines, p. 199 ; *B. carinata*, n. sp., *id.*, p. 200 ; *B. lima*, n. sp., *id.*, p. 200 ; MÖLLENDORFF (3).

Buettneria, n. g. ; *B. leuckharti*, n. sp., p. 59, pl. iii, figs. 3, 7, & 16 ; *id.* (2).

Dendrolimax greeffi, n. sp., p. 60, pl. iv, figs. 1 & 2 ; *id.* (2).

Euplecta (Pareuplecta) marginata, n. sp., p. 302, pl. vii, fig. 7, from I. of Cebu ; *id.* (1).

Euplecta kochiana, n. sp., from Philippines, p. 199 ; *id.* (3).

Helicarion adolphi, n. sp., p. 138, pl. v, figs. 1 & 1a-c, from Java ; BËTTGER (4).

Helicarion (Austenia) feæ, n. sp., p. 313, pl. ix, figs. 1 & 7, from Birmania ; CANEFRI.

Helix (Trochonanina) pretoriensis, n. sp., p. 469, from S. Africa ; MELVILL & PONSONBY.

Hemitrichia, from Philippines ; MÖLLENDORFF (2).

Hyalimæx andamanicus, n. var. *punctulatus*, p. 389, Britain ; COCKERELL (4).

Hyalinia (Polita) berysensis, n. sp., from Syria ; NÆGELE. *H. calderonii*, n. sp., p. 115 ; *H. sevilensis*, n. sp., p. 115 ; WESTERLUND (1). *H. lasti*, n. sp., p. 150, pl. v, figs. 1 & 1a ; *H. eminiana*, n. sp., p. 150, pl. v, fig. 2 ; *H. hanningtoni*, n. sp., p. 151 ; *H. depressia*, n. sp., p. 151, from S. Africa ; SMITH (6).

Hyalinia from Cebu, pp. 180 & 181 ; CROSSE (2).

Kaliella javana, n. sp., p. 142, pl. v, figs. 4 & 4a-b, from Java ; BËTTGER (4).

Lamprocystis badia, n. sp., p. 206, pl. vii, fig. 8 ; *L. imitatrix*, n. sp., p. 207, pl. vii, fig. 9, I. of Cebu ; MÖLLENDORFF (1).

Limacella confusa, n. sp., p. 384 ; *L. formosensis*, n. subsp., p. 384 ; *L. chinensis*, n. sp., p. 386, British Isles ; COCKERELL (4).

Limæx cellarius, *L. subalpinus*, *L. dacampi*, *L. corsicus* : nomenclature ; POLLONERA (2). *L. corsicus*, var. *Ciminensis*, from Corsica ; *id.* (4). *L. flavus*, n. var., from Banbury ; COLLINGE (4). *L. maximus* : origin and development of nervous system ; HENCHMAN. *L. queenslandica*, Hedley,

= *Agriolimax laevis*, Müller, and possibly *L. rarotonganus*, Heyn., from Brisbane; HEDLEY (1).

Macrochlamys kochi, n. sp., p. 201, pl. vii, fig. 6, I. of Cebu; MÖLLENDORFF (1).

Macrocyclus from Cuba, p. 180; CROSSE (2).

Malacolimax brondelianus, *M. raymondianus*: general anatomy, from Algeria; POLLONERA (1).

†*Nanina (Omphaloptyx)*, n. sp., p. 123, pl. ii, figs. 12 & 12b; †*N. eurydice*, n. sp., p. 122, pl. iii, figs. 8 & 9; †*N. (Discus) patellina*, n. sp., p. 123, pl. ii, figs. 17 & 17b; OPPENHEIM (2).

Nanina ruschenbergeri, n. sp., p. 186, with figs., from East India; PILSBRY (12). *N. ruschenbergeri*, n. sp., Lin-Kin Is.; *id.* (6).

†*Phaneropus*, n. g., *P. reinhardtii*, n. sp., p. 61, pl. iii, figs. 2, 4, & 17; SIMROTH (2).

Sitala bandongensis, n. sp., p. 141, pl. v, figs. 3 & 3a-b, from I. of Java; BÆTTGER (4). *S. trifilaris*, n. sp., from China, p. 33; GREDLER (1).

†*Trichotoxon*, n. g., *T. heyneimanni*, n. sp., p. 54, pl. iii, figs. 6, 8, 10-13; SIMROTH (2).

Trochonanina mamboinensis, n. sp., p. 151, pl. v, fig. 3; *T. episcopalis*, n. sp., p. 152, pl. v, fig. 4, from S. Africa; SMITH (6). *T. multicarinata*, n. sp., p. 141, pl. v, figs. 2 & 2a-c, from Java; BÆTTGER (4).

Vitrina birmanica, n. sp., p. 317, from Birmania; CANEFRI. *V. cingulata*, n. sp., p. 466; *V. zonamydra*, n. sp., p. 467, S. Africa; *V. huttoniae*, n. vars. *rufofilosa*, *meridionalis*, and *alvicola*, pp. 467 & 468, S. Africa; MELVILL & PONSONBY.

Vitrina pellucida: notes on habits; COLLINGE (2).

Vitrina: species with many figs.; anatomy; SIMROTH (2).

Vitroconus glaber, n. sp., from Philippines, p. 201; *V. saturalis*, n. sp., p. 201, from Philippines; MÖLLENDORFF (3). *V. quadrasi*, n. sp., p. 196, pl. vii, fig. 5, from Cebu; *id.* (1).

Zonites carolinensis, n. sp., from Colorado; COCKERELL (5). *Z. simpsoni*, n. sp., p. 412, pl. xii, figs. 8, 9, & 10; *Z. selenitoides*, n. sp., p. 413, pl. xii, figs. 13, 14, & 15, America; PILSBRY (7). *Z. shimekii*, n. sp., p. 297, pl. v, figs. 9-11, America; *id.* (1, 4). *Z. glaber* at Penistone; ADAMS (4).

Revision of Palearctic forms; POLLONERA (7).

HELICIDÆ.

Amphidromus rhombostomus, Siam; MORLET.

Anadenum cockerelli, n. sp., California; HEMPHILL (2).

Arion ater: colour of eggs and young; GAIN.

Arion minimus (a British Slug); SCHARFF.

Arion pascalianus, *A. piscatus*, *A. molleri*: nomenclature; POLLONERA (2). *A. subfuscus*; LOENS: at Ingleton; COLLINGE.

Bulimus acutus in Cumberland; ROEBUCK (1).

Bulimus fulminans (Nyst.): note on; SOWERBY.

Bulimus superstriatus, n. sp., p. 578, pl. lvi, fig. 9; *B. salteri*, n. sp., p. 578, pl. lvi, fig. 4; SOWERBY.

Bulimus (Tomigerus) ramagei, n. sp., p. 500, pl. xxx, fig. 8, from Fernando Noronha; SMITH, *vide* RIDLEY.

Campylæa cingulata, Studer, and its varieties; POLLONERA (6).

Chloritis leytenensis, n. sp., from Philippines, p. 203; MÜLLENDORFF (3).

Cochlostyla saranganica, n. sp., from Philippines, p. 204; *C. erythrospira*, n. sp., *id.* p. 204; *C. kobelti*, n. sp., *id.* p. 205; *C. schadenbergi*, n. sp., *id.* p. 205; *C. amalia*, n. sp., *id.* p. 206: from Philippines; *id.* (3).

†*Dentello caracolus*, n. sp. & subg. of *Helix*, p. 118; †*H. (D.) antigone*, n. sp., p. 119, pl. i, figs. 7 a-c; OPPENHEIM (2).

Geomalacus tournieri, n. sp., p. 38; POLLONERA (7).

Helicidae from China and Japan; SCHMACKER & BËTTGER.

Helix from Cuba: list, pp. 182-200; CROSSE (2).

Helix (Aegista) kobensis, n. sp., Japan, p. 135; SCHMACKER & BËTTGER.

Helix aggiei, n. sp., Solomon Is.; HEIMBURG.

Helix albolabris var. *maritima*, with woodcut of teeth and genitalia; PILSBRY (13).

Helix aninodata, n. sp., from China, p. 36; GREDLER (1).

Helix aspersa: cystic gonads; WILLIAMS (1).

Helix aspersa: parasitic castration; GARNAULT (1).

Helix ayresiana, new locality, Anacapo I.; YATES.

†*Helix (Chloræa) proserpina*, n. sp., p. 121, pl. i, figs. 8a & 8a-d; OPPENHEIM (2).

Helix (Corasia) woodfordii, n. sp., p. 578, pl. lvi, fig. 6; SOWERBY.

Helix fusca in Staffordshire; BURROWS.

Helix (Geotrochus) horderi, n. sp., p. 577, pl. lvi, fig. 1; SOWERBY.

Helix (Hemitrochus) streatori, n. sp., p. 413, pl. xv, fig. 1, from America; PILSBRY (7).

Helix lamellata in Ireland; DELAP.

Helix lamellata at Stafford; ADAMS (3).

Helix lamellata in Staffordshire; BURROWS.

†*Helix latebrosa*, n. sp., p. 8, pl. i, figs. 8 & 8a; †*H. instrumosa*, n. sp., p. 9, pl. i, figs. 7 & 8b; †*H. crusta*, n. sp., p. 9, pl. i, figs. 4, 4a, 4b, 6e, & 6f; †*H. diespiter*, n. sp., p. 10, pl. i, figs. 1 & 1a; †*H. direpta*, n. sp., p. 10, pl. i, figs. 7a & 7b; †*H. haruspica*, n. sp., p. 11, pl. i, figs. 7c & 7d; †*H. adamnis*, n. sp., p. 12, pl. i, figs. 5 & 5a; DALL (1).

Helix (Macularia) punctata: gonad; WILLIAMS (1).

Helix mitchelliana: extinction in Ohio; MCCREERY.

Helix nemoralis with abnormal peristome; BALLÉ (1).

Helix obvia in N. Germany; MARTENS (4).

Helix (Ophiogrya) quinquelirata, p. 500, pl. xxx, figs. 7 & 7c, from Fernando Noronha; SMITH, *vide* RIDLEY.

†*Helix (Patula) recurrenta*, n. sp., p. 123, pl. ii, figs. 13 & 13b; OPPENHEIM (2).

Helix (Pella) crawfordi, n. sp., p. 469, from S. Africa ; MELVILL & PONSONBY.

Helix pisana in Oxfordshire ; COLLINGE (1).

Helix pisana var. *tenuis*, Tenby ; TAYLOR (1).

Helix (Planispira) deaniana, n. sp., p. 188, from New Guinea ; FORD (1).

Helix pomatia : physiological chemistry ; LEVY.

Helix quedenfeldti, n. sp., from Sicily ; MARTENS (1).

Helix rufescens : dart sac ; COLLINGE (1)

Helix sepulchralis from Férussac ; CROSSE & FISCHER (5).

Helix (Xerophila) bibanensis, n. sp., p. 26 ; *H. hodnae*, n. sp., p. 26 ; *H. mitidjana*, n. sp., p. 26 ; *H. micropristis*, n. sp., p. 27 ; *H. agona*, n. sp., p. 27 ; *H. cyclostremoides*, n. sp., p. 28 ; *H. apiculiformis*, n. sp., p. 28 ; *H. (X.) bousqueti*, n. sp., p. 131 ; *H. fabriesi*, n. sp., p. 133 ; *H. tenuisculpta*, n. sp., p. 134 ; WESTERLUND (1).

Leucochroa adanensis, n. sp., from Syria ; NAEGELE.

Mesodon major, n. sp., with woodcut, p. 190, U. S. A. ; BINNEY.

Obbina platyzona, n. sp., from Philippines, p. 203 ; MÖLLENDORFF (3).

† *Prothelidomus*, n. subg., † *H. (P.) vicentina*, n. sp., p. 121, pl. i, figs. a-c ; OPPENHEIM (3).

Patula from Cuba, p. 181 ; CROSSE (2).

Patula pallens, n. sp., from China, p. 35 ; GREDLER (1).

Snails : colouring and banding ; WILLIAMS (3).

† *Trigonostoma suffthomasi*, n. sp., p. 44, pl. ii, fig. 3 ; DALL (1).

Trochomorpha bætgeri, n. sp., from Philippines, p. 201 ; *T. stenogyra*, n. sp., from Philippines, p. 202 ; MÖLLENDORFF (3). *T. concolor*, n. sp., p. 143, pl. v, figs. 6 & 6a-c ; *T. strubelli*, n. sp., p. 143, pl. v, figs. 5a-c, from Java ; BÆTGER (4). *T. godeti*, n. sp., p. 578, pl. lvi, fig. 10 ; SOWERBY. *T. pulcherrima*, p. 288, pl. iii, fig. 13, from Philadelphia ; HARTMAN.

ORTHALICIDÆ.

Liguus from Cuba, p. 201 ; CROSSE (2).

Orthalicus from Cuba, p. 201 ; *id.* (2).

BULIMULIDÆ.

Anctus pilsbryi, n. sp. ; FORD (2).

Bulimulus from Cuba, p. 200 ; CROSSE (2).

† *Bulimulus eocinus*, n. sp., p. 124, pl. ii, figs. 1-4 ; *B. marcellanus*, n. sp., p. 124, pl. ii, figs. 5 & 5a. *B. (Plectostylus ?) deperditus*, n. sp., p. 125, pl. iii, figs. 11 & 11a ; OPPENHEIM (2). *B. ragsdalei*, n. sp. ; PILSBRY (10). *B. ragsdalei*, p. 296, pl. v, fig. 3, America ; PILSBRY (1).

Bulimus exilis : variations ; SHARP.

Bulimus (Bulimulus) ridleyi, n. sp., p. 501, pl. xxx, fig. 9, Fernando Noronha ; SMITH, *vide* RIDLEY.

CYLINDRELLIDÆ.

† *Cylindrella floridana*, n. sp., p. 13, pl. i, fig. 6a; DALL (1).

Cylindrella from Cuba, list, pp. 209–243; *C. ellioti*, diagnosis, p. 212; CROSSE (2).

Macroceramus from Cuba, pp. 202–209; *id.* (2).

Pineria from Cuba, p. 202; *id.* (2).

BULIMINIDÆ.

Bulimus bernieri, n. sp., p. 284, pl. iii, fig. 2; *B. ruga*, n. sp., p. 284, pl. iii, fig. 1: from Philadelphia; HARTMAN.

Bulimus (*Buliminus*?) *gomezi*, n. sp., p. 580, pl. lvi, fig. 8; *B. (Buliminus?) hanningtoni*, n. sp., p. 580, pl. lvi, fig. 7; *id. B. (B.) subolivaceus*, n. sp., p. 156, S. Africa; SMITH (6).

Bulimus (Cerastus) emini, n. sp., p. 154, pl. v, fig. 8; *B. (C.) kidetensis*, n. sp., p. 155, pl. v, fig. 9; *B. (C.?) uniplicatus*, p. 155, pl. v, fig. 10; *B. (C.?) introversus*, n. sp., p. 155, pl. v, fig. 11; *B. (C.) mamboinensis*, n. sp., p. 153, pl. v, fig. 7; *B. (C.) lasti*, n. sp., p. 154, pl. v, fig. 8: S. Africa; SMITH (5).

Bulimus (Hapalus) subvirescens, n. sp., p. 156, pl. v, fig. 13; *B. (H.) disparilis*, n. sp., p. 156, pl. v, fig. 13; *B. (H.) associatus*, n. sp., p. 157, pl. v, fig. 14: S. Africa; SMITH (6).

Bulimus (Rhachis) usagaricus, p. 152, pl. v, fig. 5; *B. (R.) quadricingulatus*, n. sp., p. 153, pl. v, fig. 6: from S. Africa; SMITH (6).

Partula kubaryi, n. sp., p. 284, pl. iii, fig. 3, from Philadelphia; HARTMAN. † *P. vicentina*, n. sp., p. 125, pl. ii, figs. 10 & 10b; OPPENHEIM (3).

PUPIDÆ.

Alinda biplicata in Austria; TSCHAEPECK.

Clausilia almae, n. sp., p. 54, fig. 7; *C. chelidromia*, n. sp., p. 55, fig. 8; Greece; BÆTTGER (1). † *C. depertita*, n. sp., p. 128, pl. iv, fig. 8; † *C. nerinea*, n. sp., p. 128, pl. v, figs. 8–8c; OPPENHEIM (2). *C. dupouxi*, n. sp., and *C. staudingeri*, n. sp., from Syria; NAEGELE & BÆTTGER. *C. infantilis*, n. sp., from China, p. 37; GREDLER (1). *C. proteus*, n. sp., p. 49; *C. freytagi*, n. sp., p. 39, fig. 2; *C. ærtzeni*, n. sp., p. 42, fig. 3; *C. eumeus*, n. sp., p. 47, fig. 4; *C. dorica*, n. sp., p. 51, fig. 6: from Greece; BÆTTGER (1). *C. rolphi* at Well Vale; ROEBUCK (2). *C.* species from Greece; BÆTTGER (1). *C. sporadica*, n. sp., p. 58, fig. 9, from Greece; *id.* (1).

Clausilia: nomenclature of the oral folds in shell; SMITH & WOODWARD.

† *Clausilia (Acrotoma) marcellana*, n. sp., p. 128, pl. v, figs. 6 & 6b; OPPENHEIM (2).

† *Clausilia (Disjunctaria) exarata*, n. sp., p. 127, pl. iv, figs. 9–9b; *id.* (2).

Clausilia (Euphædusa) crobylodes, n. sp., China, p. 114; *C. (E.) parietaria*, n. sp., from China, p. 18; SCHMACKER & BÆTTGER.

Clausilia (Hemiphædusa) ringens, n. sp., China, p. 23; *C. (H.) strictilabris*, n. sp., China, p. 25; *C. (Formosana) albopapillata*, n. sp., China, p. 21; *C. (Garnieria) schombergi*, n. sp., China, p. 27; *iid.*

†*Clausilia (Oospira) pugniellensis*, n. sp., p. 127, pl. iv, figs. 6 & 7; OPPENHEIM (2).

†*Clausilia (Phædusa) inexplata*, n. sp., p. 128, pl. v, figs. 1 & 1a; *id.* (2).

†*Clausilia (Phædusa) silenius*, n. sp., p. 129, pl. v, figs. 2-2a & 4-4a; †*C. (Emarginaria) exsecrata*, n. sp., p. 129, pl. v, figs. 5-5d; OPPENHEIM (2).

Clausilia (Pseudonenia) salacana, n. sp., p. 149, pl. vi, figs. 2 & 2a-b, from Java; BETTGER (4).

Pseudobalea from Cuba, p. 243; CROSSE (2).

Pupa: 2 new forms; MALTZAN. *P.* from Cuba, p. 250; *id.* (2).

Pupa calamitosa, n. sp., p. 411, pl. xii, figs. 16 & 17; *P. sterkiiana*, n. sp., p. 412, pl. xii, figs. 2 & 3, America; PILSBRY (7). *P. holzingeri*, Sterki, p. 414, pl. xii, figs. 4-7, America; *id.* (7). *P. hordeacella*, n. sp., pl. i, figs. g-k, America; *id.* (9). *P. solitaria*, n. sp., p. 501, pl. xxx, figs. 10 & 10a, from Fernando Noronha; SMITH, *vide* RIDLEY. *P. syngenes*, n. sp., p. 296, pl. v, figs. 1 & 2, America; PILSBRY (1). *P. dalliana*, n. sp., America, p. 19; STERKI (2). *P. hemphilli*, n. sp., America, p. 27; *id.* (1). *P. syngenes*, n. sp., U. S. A.; PILSBRY (4). *P. clementina*, n. sp., California; STERKI (3). *P. pilsbryana*, n. sp., Arizona, p. 123; *id.* (1). *P. (Vertigo) eggeri*, n. sp., from Tyrol; GREDLER (3). *P. ringens*, in Pembroke-shire; FALLOON (1).

†*Pupa (Paracratricula) umbra*, n. sp., p. 126, pl. iii, figs. 10-10b; OPPENHEIM (2).

†*Strophia anodonta*, n. sp., p. 13, pl. i, figs. 8c & 8d; DALL (1).

†*Strophia floridana*, p. 13, pl. i, fig. 6; *id.* (1).

Strophia from Cuba, p. 252; CROSSE (2).

Vertigo callosa, n. sp., p. 31; *V. binneyana*, n. sp., p. 33; *V. oscariana*, n. sp., p. 33; *V. rugosula*, n. sp., p. 34: America; STERKI (4).

Vertigo from Cuba, p. 281; CROSSE (2).

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Achatina: list of species from S. Africa, and *A. burnupi*, n. sp., p. 393; SMITH (6).

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Cionella (from Crone), p. 250; CROSSE (2).

Cionella subsaccata, n. sp., p. 48; *C. tenella*, n. sp., p. 48; *C. westerlandiana*, n. sp., p. 49; WESTERLUND (1).

Geostilbia from Cuba, p. 250; CROSSE (2).

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Limicolaria guinaica, n. sp., Equatorial Africa, p. 66, pl. i, fig. 2; *L. vignoniana*, Equatorial Africa, p. 65; MORELET.

Melaniella from Cuba, p. 249; CROSSE (2).

Obeliscus sanctæ-helenæ, n. sp., p. 275, pl. xxiii, fig. 17; *O. (Syrnola) pumilio*, n. sp., p. 275, pl. xxii, fig. 3; SMITH (8).

Opeas from Cuba, p. 245; CROSSE (2).

Stenogyra from Cuba, p. 244; *id.* (2).

Stenogyra (Opeas) stenostoma, n. sp., p. 160, pl. v, fig. 20, from S. Africa; SMITH (6).

Stenogyra (Subalina) subcarinifera, n. sp., p. 157, pl. v, fig. 15; *S. (S.) mamboiensis*, n. sp., p. 158, pl. v, fig. 16; *S. (S.) usagarica*, p. 158, pl. v, fig. 17; *S. (S.) lasti*, p. 158, pl. v, fig. 18; *S. (S.) emini*, p. 159, pl. v, fig. 19; *S. (S.) intermedia*, n. sp., Taylor, from S. Africa; *id.* (6). *S. sowerbyana*, n. sp., Equatorial Africa, p. 67; MORELET.

Spiraxis from Cuba, p. 248; CROSSE (2).

Subalina from Cuba, p. 247; *id.* (2).

SUCCINEIDÆ.

Succinea from Cuba, p. 255; CROSSE (2).

Succinea goeakensis, n. sp., sub-fossil from Sahara; FISCHER (6).

ATHORACOPHORIDÆ.

Athoracophoridae; species with figs; SIMROTH (2).

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Leonardia, n. g.; *L. nevilleiana*, n. sp., p. 332, pl. viii, figs. 1-3e, pl. vii, figs. 1-5, from Burmah; CANEFRI.

Vaginula from Cuba, p. 257; CROSSE (2).

Vaginula andersoniana, n. sp., p. 338, pl. vii, figs. 6 & 7; *V. proxima*, n. sp., p. 338, pl. vii, figs. 8 & 9, from Burmah; CANEFRI.

Vaginulus schivelyæ, n. sp., p. 297, pl. v, figs. 6-8, America; PILSBRY, (1).

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Oncidium pallidipes, n. sp., p. 329, from Burmah; CANEFRI.

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Alexia kobelti, n. sp., from Marsa-Scirocco; CARUANO-GATTO.

Blaumeria from Cuba, p. 259; CROSSE (2).

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Melampus from Cuba, p. 258; *id.* (2).

Pedipes from Cuba, p. 259 ; CROSSE (2).

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OTINIDÆ.

Otina otis, var. *candida*, in Pembrokeshire ; FALLOON (2).

LIMNAEIDÆ.

Ancylus from Cuba, p. 262 ; CROSSE (2).

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A. smithi, n. sp., p. 658, pl. xix, figs. 1-3, from Australia ; COX.

Bulinus (*Isidora*) *dybowskii*, n. sp., sub-fossil from the Sahara, p. 375 ; FISCHER (6).

Gundlachia from Cuba, p. 262 ; CROSSE (2).

Limnæa from Cuba, p. 260 ; *id.* (2).

Limnæa peregra : variation ; TAYLOR (2).

Limnæa saharica, n. sp., sub-fossil from the Sahara, p. 375 ; FISCHER (6). *L. glutinosa*, near Hull ; FIERKE.

Planorbis : shell coils ; PFEFFER (2).

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Planorbis aegyptiacus, n. sp., p. 84 ; WESTERLUND (1). †*P. conanti*, n. sp., p. 20, pl. 10, figs. 1 & 1a ; DALL (1). †*P. dissioni*, n. sp., p. 21, pl. x, figs. 2 & 2a ; *id.* *P. monceti*, n. sp., p. 18, Lake Tanganyika ; BOURGUIGNAT. *P. noronhensis*, n. sp., p. 502, pl. xxx, figs. 11 & 11b, from Fernando Noronha ; SMITH, *vide* RIDLEY. †*P. tressinensis*, n. sp., p. 130, pl. ii, figs. 18-18c ; OPPENHEIM (2). †*P. wilcoxii*, n. sp., p. 4, pl. i, figs. 6 & 6d ; DALL (1).

Planorbis from Cuba, p. 260 ; CROSSE (2).

PHYSIDÆ.

Aplecta from Cuba, p. 263 ; CROSSE (2).

†*Physa meigsii*, n. sp., p. 22, pl. 10, fig. 12 ; DALL (1).

Physa from Cuba, p. 263 ; CROSSE (2).

Physa acuta in Scotland ; JENKINS (2).

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†*Acroria*, n. g., p. 324, Eocene ; COSSMANN.

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Siphonaria picta var. ? , p. 497, pl. xxx, figs. 4 & 4b, Fernando Noronha ; SMITH, *vide* RIDLEY.

GASTEROPODA OPISTHOBRANCHIATA.

General.

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OPISTHOBRANCHIATA NUDIBRANCHIATA.

General.

Cerata; HERDMAN & CLUBB.

Structure and functions of the Cerata; HERDMAN.

Nudibranchiata of Liverpool district; HERDMAN & CLUBB.

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Phialodoris, n. g.; *P. podotria*, n. sp., p. 908, pl. lxxxvii, figs. 34-43, Philippines; *id.* (1).

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Nembrotha gratiosa, n. sp., p. 177, pl. ii, figs. 1-5, pl. iii, figs. 1-4, Mexico ; *id.* (2). *N. gratiosa*, n. sp., p. 981, pl. lxxxix, figs. 39-45, Philippines ; *id.* (1).

Placamopherus amboinensis, n. sp., p. 951 ; *P. indicus*, p. 954, pl. lxxxix, figs. 33-38, Philippines ; *id.* (1).

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OPISTHOBRANCHIATA TECTIBRANCHIATA.

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† *Actæon* or *Avellana*, from W. Australia, p. 243, pl. ix, fig. 4 ; HUDDLESTON.

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Actæon semisculptus, n. sp., p. 298, pl. xxiv, fig. 8, Ascension ; SMITH (8).

† *Acteonina burensis*, n. sp., p. 7, pl. 1, fig. 2 ; † *A. greppini*, n. sp., p. 8, pl. 1, figs. 6 & 7 ; LORIOLO (1).

† *Acteonina ursicina*, n. sp., p. 167, pl. xviii, fig. 10 ; † *A. greppini*, n. sp., p. 168, pl. xviii, figs. 9 & 9b ; LORIOLO (2).

† *Cylindrites miles*, n. sp., p. 10, pl. 1, fig. 9 ; *id.* (1).

Leucotina minuta, n. sp., p. 298, pl. xxiv, fig. 9, Ascension I. ; SMITH (8).

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† *Utriculus vaginatus*, n. sp., p. 16 ; DALL (1).

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APLYSIIDÆ.

Aplysiidæ: the gland of Bohadsch ; MAZZARELLI (3).

Aplysiidæ: digestive system ; SUCCARDI.

Aplysiidæ: notes on colour ; GARSTANG.

Aplysia: blood and lymphatic gland ; CUÉNOT (1).

Aplysia: colouring matter ; SAINT-LOUP.

Aplysia: pouch of Swammerdam ; MAZZARELLI (1).

Aplysia: reproduction ; ROBERT.

Reproductive system ; MAZZARELLI (1).

Aplysia lobiancoi, n. sp. ; *id.* (2).

RINGICULIDÆ.

† *Ringicula floridana*, p. 14, pl. iii, fig. 8 ; † *R. guppyi*, p. 14, pl. iii, fig. 7 ; DALL (1).

OXYNOËIDÆ.

Lobiger wilsoni, n. sp., p. 66, Australia ; WILSON, J. B.

UMBRELLIDÆ.

Tyrodina americana, n. sp. ; DALL (5).

Umbrella corticalis, n. sp., p. 66, Australia ; WILSON, J. B.

GASTEROPODA NUCLEOBRANCHIATA.

ATLANTIDÆ.

† *Atlanta* from British waters, with plate ; M'INTOSH.

† *Eoatlanta*, n. g., p. 297, Eocene ; COSSMANN.

GASTEROPODA PROSOBRANCHIATA.

General.

Prosobranchiata: excretory apparatus; PERRIER, R.: mantle and its organs; BERNARD (1): mucous glands; *id.* (1): structure of gills; *id.* (1).

PROSOBRANCHIATA PECTINIBRANCHIATA.

CONIDÆ.

† *Amblyacrum*, n. g., p. 291 (Eocene); COSSMANN.

↓ *Calliotectum*, n. subg., *C. vernicosum*, n. sp., p. 304, pl. v, fig. 8; DALL (2).

† *Conus crusianus*, n. sp., p. 25, pl. v, fig. 12; *id.* (1).

† *Cythara terminula*, n. sp., p. 38, pl. ii, fig. 5; *id.* (1).

† *Daphnella cingulata*, n. sp., p. 38, pl. ii, fig. 3; † *D. modesta*, n. sp., p. 39, pl. ii, fig. 4; *id.* (1).

† *Drillia newmani*, n. sp., p. 29, pl. iv, figs. 5 & 5a; † *D. acurugata*, n. sp., p. 32, pl. ii, fig. 12; † *D. acucincta*, n. sp., p. 32, pl. ii, fig. 11; † *D. sedilia*, n. sp., p. 33, pl. ii, fig. 1; † *D. podagrina*, n. sp., p. 33, pl. ii, fig. 9; † *D. piscator*, n. sp., p. 34, pl. ii, fig. 10; † *D. edilia*, n. sp., p. 35, pl. iii, fig. 9; † *D. bigemma*, n. sp., p. 35, pl. ii, fig. 6; *id.* (1).

† *Glyphostoma watsoni*, n. sp., p. 40, pl. ii, fig. 7; *id.* (1).

† *Mitromorpha cincta*, n. sp., p. 95, pl. iii, fig. 6; † *M. pygmaea*, p. 95, pl. x, fig. 3; *id.* (1).

† *Pleurotomidae* of Tertiary Basin of Vienna; HERNER.

† *Pleurotoma albidia*, p. 28, pl. iv, figs. 8 & 8a; *P. exulans*, n. sp., p. 302, pl. 5, fig. 7, U. S. A.; DALL (1). *P. leucosyrinx goodei*, n. sp., p. 300, pl. vi, fig. 1; *P. persimilis*, n. sp., p. 301, pl. vi, fig. 3; U. S. A.; *id.* (2).

Pleurotoma (Clavus) amanda, p. 255, pl. xxi, fig. 1; *P. (C.) prolongata*, n. sp., p. 255, pl. xxiii, fig. 1; *P. (C.) albobaltata*, n. sp., p. 255, pl. xxi, fig. 2: Ascension I.; SMITH (8).

Pleurotoma (Clatharella) multigranosa, n. sp., p. 258, pl. xxi, fig. 6; *P. (C.?) usta*, n. sp., p. 258, pl. xxiii, fig. 4: Ascension I.; SMITH (8).

Pleurotoma (Mangilia) atlantica, n. sp., p. 307, pl. xxiv, fig. 11, Ascension I.; SMITH (8).

† *Pleurotomella chariessa*, var. *pistillata*, p. 41, pl. iii, fig. 3; DALL (1).

Pleurotomella cingulata, n. sp., p. 306, pl. vi, fig. 2; *P. argeta*, n. sp., p. 307, pl. vi, fig. 5; *P. (Gymnobela) agonia*, n. sp., p. 307, pl. vi, fig. 4; *P. suffusa*, n. sp., p. 308, pl. xii, fig. 10; U. S. A.; DALL (2).

† *Trachelochetus*, n. g., p. 250 (Eocene); COSSMANN.

CANCELLARIIDÆ.

† *Cancellaria conradiana*, n. sp., p. 42, pl. iii, fig. 13; DALL (1).

OLIVIDÆ.

†*Ancillaria ancilleps*, n. sp., p. 406, pl. xi, fig. 4 ; HEILPRIN (1). †*A. shepardi*, n. sp., p. 46, pl. iv, fig. 4 ; DALL (1).

†*Oliva semmelinki*, n. sp. ; SCHEPMAN.

†*Olivella lata*, n. sp., p. 45, pl. iv, fig. 8*b* ; DALL (1).

HARPIDÆ.

†*Harpidae* : Tertiary forms from Piemonte and Liguria ; SACCO (3).

MARGINELLIDÆ.

†*Marginellidae* : revision of known fossil forms, pp. 56 & 57 ; DALL (1).

†*Marginella ballista*, n. sp., p. 47, pl. iv, fig. 6 ; DALL (1). *M. (Volvaria) consanguinea*, n. sp., p. 266, pl. xxiii, fig. 11 ; *M. atomus*, n. sp., Ascension I., p. 267, pl. xxiii, fig. 13 ; SMITH (8). †*M. precursor*, n. sp., p. 47, pl. v, fig. 4 ; †*M. floridana*, n. sp., p. 49, pl. v, fig. 5 ; †*M. willcoxiana*, n. sp., p. 50, pl. v, fig. 7 ; †*M. aurora*, n. sp., p. 51, pl. vi, fig. 4*a* ; †*M. denticulata*, p. 51, pl. v, fig. 8 ; †*M. faunula*, n. sp., p. 53, pl. iv, fig. 9*b* ; †*M. elegantula*, n. sp., p. 54, pl. iv, fig. 7 ; †*M. newmani*, n. sp., p. 54, pl. iv, fig. 8 ; †*M. styria*, p. 54, pl. v, fig. 1 ; †*M. gravis*, n. sp., p. 55, pl. v, fig. 3 ; †*M. amiantula*, n. sp., p. 56, pl. v, fig. 9 ; DALL (1).

VOLUTIDÆ.

†*Cymba* subg. *Eucymba*, p. 81, pl. vii, fig. 1 ; DALL (1).

†*Eucymba ocalana*, p. 89, pl. ii, fig. 1 ; *id.* (1).

†*Lapparia*, p. 79, pl. vi, fig. 6 ; *id.* (1).

†*Liopreplum*, n. n. for *Lioderma*, Conrad, p. 73, pl. vi, figs. 12 & 12*a* ; DALL. †*L. spillmani*, n. sp., p. 82, pl. vi, fig. 12 ; †*L. subjugosum*, p. 83, pl. vi, fig. 12*a* ; *id.* (1).

†*Lyria pulchella*, p. 84, pl. iv, fig. 3 ; †*L. costata*, p. 85, pl. vi, fig. 2 ; *id.* (1).

†*Perplicaria perplexa*, n. sp., p. 90, pl. iii, fig. 1 ; *id.* (1).

†*Scaphella*, various species, pp. 86–89, pls. vi & vii ; *id.* (1).

†*Volutidae* : development of fossil forms, pp. 57–72 ; *id.* (1).

†*Volutilithes*, p. 74, pl. vi, figs. 1, 3, & 4 ; *id.* (1).

†*Volutilithes* subgg. *Volutocorbis*, *Athleta*, and *Volutopupa*, pp. 75 & 76 ; *id.* (1).

†*Volutilithes* subg. *Caricella*, p. 78, pl. vi, figs. 9–11, & pl. vii, fig. 3 ;

†*V. precursor*, p. 84, pl. vi, fig. 1 ; *id.* (1). *V. philippiana*, n. sp., p. 313, pl. ix, fig. 4 ; *id.* (2).

MITRIDÆ.

†*Conomitra intermedia*, n. sp., p. 316, pl. v, fig. 3 ; †*C. staminea*, p. 94, pl. iv, fig. 12 ; DALL (1).

†*Mitra holmesii*, n. sp., p. 92, pl. iii, fig. 11 ; †*M. willcoxii*, n. sp., p. 93, pl. iii, fig. 10 ; *id.* (1).

Mitra (Turricula) innotabilis, Ascension I., p. 265, pl. xxiii, fig. 9 ; SMITH (8).

Mitra (Thala) pleurotomoides, Ascension I., n. sp., pl. xxiii, fig. 10 ; *id.* (8).

Mitra (Pusia) sanctæ-helenæ, n. sp., p. 265, pl. xxii, fig. 7 ; *id.* (7).

Mitra (Cancilla) turtoni, n. sp., p. 265, pl. xxii, fig. 1 ; *id.* (7).

FASCIOLARIIDÆ.

†*Clavella (Fusus) penrosei*, n. sp., p. 405, pl. xi, fig. 1 ; HEILPRIN (1).

†*Fasciolariidæ* from Upper Miocene ; TOLDO.

Fusus : British species ; JORDAN.

†*Fusus ballista*, n. sp., p. 127, pl. viii, fig. 4 ; DALL (1).

†*Fusus* (?) *quinqnespinus*, n. sp., p. 128 ; *id.* (1).

†*Fusus (Chrysodomus) ? nexilis*, n. sp., p. 128, pl. viii, fig. 4 ; *id.* (1).

†*Latirofusus*, n. g., p. 175 (Eocene) ; COSSMANN.

†*Latirus callimorphus*, n. sp., p. 107, pl. viii, fig. 1 ; †*L. rugatus*, n. sp., p. 107, pl. viii, figs. 6 & 7 ; †*L. hypsipettus*, n. sp., p. 108, pl. x, fig. 5 ; †*L. tessellatus*, n. sp., p. 108, pl. x, fig. 8a ; DALL (1).

†*Mazzalina costata*, n. sp., p. 106, allied to *Fasciolaria* ; *id.* (1).

†*Mesorhytis costatus*, n. sp., p. 317, pl. v, fig. 5 ; *id.* (2).

Pseudofusus gigliolii, Palermo, n. sp., p. 182 ; MONTEROSATO.

†*Solenosteira inornata*, n. sp., p. 123 ; †*S. menegeana*, n. sp., p. 122, pl. ix, fig. 4 ; DALL (1).

†*Streptochetus*, n. g., p. 170 (Eocene) ; COSSMANN.

TURBINELLIDÆ.

†*Fulgur*, var. sp., pp. 109–117 ; DALL (1).

†*Fulgur planulatum*, n. sp., p. 114 ; †*F. stellatum*, n. sp., p. 114, pl. iv, fig. 9 ; †*F. echinatum*, n. sp., p. 117, pl. ix, fig. 2 ; *id.* (1).

†*Melongena sculptura*, n. sp., p. 118, pl. viii, fig. 3 ; †*M. sculptura* var. *turricula*, p. 119, pl. viii, fig. 3 ; *id.* (1).

†*Turbinella chipolana*, n. sp., p. 97, pl. x, fig. 7 ; †*T. scolymoides*, n. sp., p. 98, pl. iii, figs. 2 & 5 ; *id.* (1).

BUCCINIDÆ.

†*Buccinidæ*, of Upper Miocene ; PANTANELLI.

Buccitriton scalatum, n. sp., p. 405, pl. xi, fig. 5 ; HEILPRIN (1). *B. viridum*, n. sp., p. 370, pl. vi, fig. 4 ; DALL (2).

Cantharus (Tritonidea) albozonatus, p. 260, pl. xxi, fig. 9 ; *C. (T.) consanguineus*, n. sp., p. 210, pl. xxi, fig. 10 ; *C. (T.) lævis*, n. sp., p. 261, pl. xxi, fig. 11, from St. Helena ; SMITH (7).

Chrysodomus amiantus, n. sp., p. 321, pl. v, fig. 10 ; *C. griseus*, n. sp.,

p. 322, pl. v, fig. 6; *C. aphelus*, n. sp., p. 323, pl. vi, fig. 7; *C. (Sipho) testudinis*, n. sp., p. 324; DALL (2).

Neptunea contraria: structure; FISCHER & BOUVIER.

†*Pisania*, subg. *Tritonidea pauper*, n. sp., p. 129, pl. iv, fig. 8c; DALL (1).

†*Suessonia*, n. g., p. 157 (Eocene); COSSMANN.

NASSIDÆ.

†*Nassa bidentata*, p. 133, pl. ix, fig. 9; †*N. lapenotierei*, n. sp., p. 133, pl. ix, fig. 8; †*N. calovsaensis*, n. sp., p. 134, pl. ix, fig. 7; DALL (1). *N. ringicula*, n. sp., p. 185, from Palermo; MONTEROSATO. *N. townsendi*, n. sp., p. 326, pl. xii, fig. 4; DALL (2).

†*Nassa controversa*, nom. emen. = *N. pulchra*, Bell, from Upper Miocene, p. 9; †*N. velutina*, Doderlin, ined. sp., p. 11; PANTANELLI.

✓*Nassopsis*, n. g., *N. nassa* var. *grandis*, from Central Africa; SMITH (4).

COLUMBELLIDÆ.

†*Anachis camix*, n. sp., p. 136, pl. xii, fig. 3; †*A. ithotoma*, n. sp., p. 136, pl. xii, fig. 6; DALL (1).

Columbella (Mitrella) sanctæ-helenæ, n. sp., p. 262, pl. xxi, fig. 12; SMITH (7). *C. permodesta*, n. sp., p. 327, pl. v, fig. 4; DALL (2).

Columbella (Mitrella) proscripta, p. 308, pl. xxiv, fig. 17; SMITH (7).

MURICIDÆ.

†*Eupleura miocenica*, n. sp., p. 146, pl. xii, fig. 9; DALL (1).

Lachesis helenæ, n. sp., p. 260, pl. xxi, fig. 8; SMITH (7).

Murex (Chicoreus) leeanus, n. sp., p. 329, pl. vii, fig. 1; DALL (2).

†*Murex micromeris*, n. sp., p. 141, pl. xii, fig. 12; DALL (1).

Murex (Ocinebra) patruelis, n. sp., p. 259, pl. xxiii, fig. 6; *M. (O.) alboangulatus*, n. sp., p. 259, pl. xxi, fig. 7; *M. (O.) sanctæ-helenæ*, n. sp., p. 259, pl. xxiii, fig. 5; SMITH (7).

Murex: modification of the shell; BAKER.

†*Muricidæ* from Upper Miocene; TOLDO.

†*Purpuridæ* of Upper Miocene; PANTANELLI.

Purpura lapillus: purple; LETELLIER (2).

Purpura lapillus: formation and use of purple; *id.* (1).

†*Rapana tampaensis*, n. sp., p. 155; DALL (1).

†*Typhis linguiferus*, n. sp., p. 152, pl. xii, fig. 7; *id.* (1).

CORALLIOPHILIDÆ.

Coralliophila erythrostoma, n. sp., p. 264, pl. xxiii, fig. 7; *C. atlantica*, n. sp., p. 264, pl. xxiii, fig. 8, from St. Helena; SMITH (7). †*C. magna*, n. sp., p. 155, pl. ii, figs. 11 & 12; †*C. lepidota*, n. sp., p. 156, pl. ix, fig. 3; DALL (1).

TRITONIDÆ.

Triton ridleyi, n. sp., p. 489, pl. xxx, fig. 1; SMITH, *vide* RIDLEY. *T. turtoni*, n. sp., p. 268, pl. xxi, figs. 13 & 13a, from St. Helena; SMITH (7).
†*Tritonidæ*, from Upper Miocene; TOLDO.

COLUMBELLINIDÆ.

†*Petersia microstoma*, n. sp., p. 13, pl. i, fig. 16; LORIOI (1).

CASSIDIDÆ.

Cassididæ: Tertiary forms from Piemonte and Liguria; SACCO (3).

†*Cassis*, subg. *Phalium*; †*P. gloriosum*, n. sp., p. 161; †*P. aldrichi*, n. sp., p. 162; DALL (1).

†*Cassis mamillaris*, n. var. *appenninica*, *nummulitiphila*, *pedemontana*; SACCO (3) p. 4. †*C. postmamillaris*, n. sp.; *id.* var. *volutilithoides*; *id.* (3) pp. 4 & 5.

†*Cassis*: *Galeodocassis*, n. subg.; †*G. anceps*, n. sp., p. 5; †*G. subharpiformis*, n. sp., p. 5; *id.* (3) pp. 5 & 6.

†*Cassis*, subg. *Semicassis*: †*S. miolævigata*, n. sp., *id.* var. *miostriata*, *id.* var. *miogloboides*, *id.* var. *tuberculata*, *id.* var. *transiens*, p. 8; †*S. lævigata* var. *pliosulcata*, *id.* var. *pliogigantea*, p. 8; †*S. subsulcosa* var. *pedemontana*, p. 8; SACCO (3).

†*Cassis*, n. subg. *Echinophoria*: †*E. isselii*, n. sp., p. 9; †*E. æquinodosa*, var. *depressa*, *id.* var. *italica*; †*E. rondeletii* var. *appenninica*, *id.* var. *taurinensis*, p. 9; †*E. pliorondeletii*, n. sp., p. 10; †*E. variabilis* var. *costata*, var. *basicostata*, var. *transiens*, var. *unocincta*, var. *bicincta*, var. *quatuor-cincta*, p. 10; †*E. intermedia*, var. *subvariabilis*, var. *mioelegans*, var. *stazzanensis*, var. *tricincta*, var. *quinguecincta*, var. *subtriseriata*, p. 10; †*E. hoernesii*, n. sp., p. 11; *id.* (3).

†*Galeodea postcoronata*, n. sp.; †*G. miocristata*, n. sp., *id.* var. *canaliculata*; *id.* (3) p. 13. †*G. taurinensis*, n. sp., var. *subtriangulata*, var. *quinguecingulata*, var. *globosofusciata*, var. *globosotuberculata*, pp. 13 & 14. †*G. sconsioides*, n. sp., †*G. tauroperculea*, n. sp., †*G. deformis*, n. sp., †*G. turbinata*, n. sp., †*G. tauroscalarata*, n. sp., †*G. tauropyrulata*, n. sp., †*G. tauroglobosa*, n. sp., †*G. tauropomum*, n. sp., *id.* var. *langarum*, †*G. globosostazzanensis*, n. sp., †*G. oblongoubana*, n. sp.; *id.* (3) pp. 14 & 15.

†*Morio*, subg. *Galeodea*: †*G. echinophora* var. *initialis*, p. 11; *id.* var. *mioturrita*, *id.* var. *miocostulata*, *id.* var. *rovasindæ*, *id.* var. *miotriseriata*, *id.* var. *miotriseriata*, *id.* var. *destonensis*, *id.* var. *transiens*, *id.* var. *placentina*, *id.* var. *pliotriseriata*, *id.* var. *plioiseriata*, p. 13; *id.* var. *subtyrrhena*, *id.* var. *pseudotyrrhena*, p. 11; *id.* (3).

†*Morio*, n. subg. *Galeodosconsia*; †*G. striatula*, var. *subottonangiensis*, p. 17; *id.* (3).

†*Morio*, n. subg. *Morionassa*; †*M. amplexans*, n. sp., p. 18; *id.* (3).

Margovoluta bellardii, n. sp., p. 20 ; *id.* (3).

†*Oniscia*, subg. *Oniscidia*; †*O. cythara*, var. *cassinellensis*, *id.* var. *pleuricostata*, pp. 18 & 19; †*O. appenninica*, n. sp.; †*O. postcythara*, n. sp.; †*O. verrucosa*, var. *costilatissima*, p. 19; SACCO (3).

†*Oniscia*, subg. *Cithara*?

DOLIIDÆ.

†*Doliidæ*: list of species; SACCO (1).

†*Eudolium antiquum*, n. sp., p. 22; †*E. stephaniophorum*, n. var. *miotransiens*, n. var. *gigantula*, n. var. *recurvicauda*, n. var. *pliotransiens*, n. var. *tricingulata*, n. var. *quatuorcingulata*, n. var. *alternituberculata*, n. var. *pluricingulata*, n. var. *acutituberculata*, pp. 22 & 23; †*E. fasciatum*, n. var. *præcedens*, n. var. *pluricostata*, n. var. *stazzanensis*, p. 23; *Eudolium*: table of relations of species, p. 23; †*E. fasciatum*, n. sp., p. 22, n. var. *supratuberculifera*, n. var. *unituberculifera*, n. var. *percostata*: SACCO (1).

Ficula: table of species relations; SACCO (1).

†*Ficula condita*, n. vars. *araneiformis*, *laxecostata*, *pseudogeometra*, *agassizi*, *proreticulata*, *anteficoides*, p. 25; †*F. oligoficoides*, n. sp., p. 25; †*F. oligoreticulata*, n. sp., p. 26; †*F. reticulata*, n. vars. *geometroides*, *stricticostata*; †*F. plioringulata*, n. sp.; †*F. ficoides*, n. var. *colligens*, p. 25; †*F. geometra*, n. vars. *spiralata*, *taurinensis*, *berilla*, p. 25, *id.* n. vars. *pseudoreticulata*, p. 26; SACCO (1).

†*Fulguroficus*, n. g., p. 27; †*F. burdigalensis*, n. var. *quinquecingulata*; table of species of *Fulguroficus*; SACCO (1).

†*Fusoficula*, n. subg., p. 26; †*F. appenninica*, n. sp.; *id.* (1).

†*Galeodoliidæ*: list of species; *id.* (1).

†*Malea orbiculata*, *id.* n. var. *pliobidentata*, *id.* n. var. *giganteodentata*, *id.* n. var. *parvudentata*, *id.* n. var. *stazzanensis*. †*M. proorbiculata*, n. sp. *Malea*: table of species, relations; *id.* (1) p. 24.

CYPRÆIDÆ.

†List of Tertiary species, p. 25; SACCO (1).

†*Cypræa heilprini*, n. sp., p. 166, pl. ii, figs. 2 & 2a; †*C. wilcoxi*, n. sp., p. 166, pl. v, figs. 12b & 12c; DALL (1). *C. irvineanæ*, n. sp., p. 659, pl. xix, figs. 7-9; COX. *C. moneta* on the coast of Cumberland; CRAWSHAW.

†*Ovula* (*Transovula*) *multicarinata*, n. sp., p. 164, pl. x, figs. 10 & 11; DALL (1).

STROMBIDÆ.

†*Rostellaria*, subg. *Orthaulax*; †*O. gabbi*, n. sp., p. 170, pl. xii, figs. 5, 5a, & 5b; DALL (1).

†*Rostellaria*, subg. *Rimella*; †*R. smithii*, n. sp., p. 172, pl. x, figs. 4 & 6; *id.* (1).

†*Strombus albireptanus*, n. sp., p. 174, pl. xii, figs. 2 & 10; †*S. aldrichi*, n. sp., p. 175, pl. xii, figs. 1 & 4; †*S. chipolana*, n. sp., p. 175, pl. iv, fig. 1; *id.* (1).

CHENOPODIDÆ.

- †*Alaria* or *Anchura* sp.? from West Australia, p. 242, pl. ix, fig. 2 ; HUDDLESTON.
 †*Alaria alba*, n. sp., p. 77, pl. ii, figs. 10-14 ; LORIOI & KOBY.
 †*Chenopus greppini*, n. sp., p. 169, pl. xxviii, fig. 11 ; *iid.*
 †*Diarthema matheyi*, n. sp., p. 24, pl. ii, fig. 9 ; *iid.*
 †*Ischnodactylus*, n. g., p. 83, Eocene ; COSSMANN.

CERITHIIDÆ.

- †*Alocaxis*, n. g., type *Cerithium cylindraceum* (Eocene), p. 60 ; COSSMANN.
 †*Brachytrema kobyi*, n. sp., p. 20, pl. ii, figs. 6 & 7 ; LORIOI & KOBY.
 †*Ceritella greppini*, n. sp., p. 76, pl. ix, figs. 17-20 ; †*C. elata*, n. sp., p. 78, pl. ix, figs. 20-22 ; †*C. matheyi*, n. sp., p. 79, pl. ix, fig. 24 ; *iid.*
Cerithidea rollei, n. sp., from China ; KOBELT.
 †*Cerithium agir*, n. sp., p. 171, pl. xviii, fig. 13 ; †*C. matheyi*, n. sp., p. 172, pl. xviii, fig. 14 ; †*C. thoro*, n. sp., p. 173, pl. xviii, fig. 15 ; *id.* (2).
 †*C. sirena*, n. sp., p. 460, pl. xx, figs. 7 & 8 ; OPPENHEIM (1). †*C. texanum*, n. sp., pl. xi, fig. 2, p. 404 ; HEILPRIN (1). †*C. ursicinum*, n. sp., p. 66, pl. ix, figs. 3-5 ; †*C. kobyi*, n. sp., p. 69, pl. ix, fig. 10 ; †*C. ymir*, n. sp., p. 70, pl. ix, fig. 11 ; †*C. blauense*, n. sp., p. 71, pl. ix, fig. 16 ; LORIOI & KOBY.
 †*Ditretus belus*, n. sp., p. 170, pl. xviii, fig. 2 ; †*D. thurmanni*, n. sp., p. 75, pl. viii, figs. 18-22 ; *iid.*
 †*Orthochetus*, n. g., type †*Cerithium leufroyi* (Eocene), p. 59 ; COSSMANN.
Triforis atlantica, n. sp., p. 292, pl. xxi, fig. 26 ; *T. recta*, n. sp., p. 292, pl. xxiv, fig. 3 ; *T. bathyraphe*, n. sp., p. 292, pl. xxiv, fig. 4, from St. Helena ; SMITH (7).
 †*Trypanaxis*, n. g., type †*Cerithium umbilicatum*, p. 60, Eocene ; COSSMANN.

NERINEIDÆ.

- †*Nerinea (Itieria) biconus*, n. sp., p. 459, pl. xix, figs. 4-6, 13 & 14 ; †*N. (Diptyxis ?) biplicata*, n. sp., p. 460 ; OPPENHEIM (1).
 †*Nerinea boncourtenis*, n. sp., p. 40, pl. vi, fig. 9 ; †*N. kobyi*, n. sp., p. 35, pl. iv, fig. 4 ; †*N. gressleyi*, n. sp., p. 44, pl. v, fig. 6 ; †*N. gagnebini*, n. sp., p. 36, pl. v, figs. 1-12 ; †*N. episcopalis*, n. sp., p. 68, pl. vii, figs. 8-11 ; †*N. greppini*, n. sp., p. 56, pl. vii, figs. 12 & 13 ; †*N. flora*, n. sp., p. 57, pl. v, fig. 7 ; †*N. cybele*, n. sp., p. 58, pl. vii, fig. 7 ; LORIOI & KOBY.
 †*N. titania*, n. sp., p. 169, pl. xxv, fig. 3, pl. xxvi, fig. 3 ; †*N. euphyes*, n. sp., p. 170, pl. xxvi, fig. 11 ; †*N. (Ptygmatis) loculata*, n. sp., p. 170, pl. xxv, fig. 6, pl. xxvi, fig. 8 ; FELIX.
Nerinea : various species, with figs. from Cretaceous of Mexico ; HEILPRIN (2).

†*Pseudonerinea*, n. g. ; †*P. blauensis*, n. sp., p. 81, pl. x, figs. 1-5 ; †*P. gracilis*, n. sp., p. 82, pl. x, figs. 6 & 7 ; LORIOLO & KOPY.

†*Ptygmatis* ? *mirabilis*, n. sp., p. 30, pl. iii, fig. 14 ; *iid.*

TURRITELLIDÆ.

†*Turritella wadana*, n. sp., p. 198, pl. xxv, figs. 9a, b, 10, & 11 ; YOKOYAMA.

PSEUDOMELANIIDÆ.

†*Macrochilina aperta*, n. sp., p. 441, pl. xxvii, fig. 21 ; WALTHER.

†*Oonia daphne*, n. sp., p. 87, pl. xi, fig. 6 ; LORIOLO & KOPY.

†*Pseudomelania kobyi*, n. sp., p. 85, pl. xi, fig. 1 ; †*P. inconspicua*, n. sp., p. 86, pl. xi, figs. 2-5 ; LORIOLO & KOPY.

MELANIIDÆ.

Melania (Melanoides) reevei, n. var. *regularis*, p. 300, from Burmah ; CANEFRI. *M. (M.) subcancellata*, n. sp., from Java, p. 151, pl. vi, figs. 4 & 4a ; BERTGER (4). *M. rossiteri*, n. sp., p. 287, pl. iii, fig. 12 ; *M. rubricata*, n. sp., p. 285, pl. iii, fig. 4 ; HARTMAN.

Melania from Cuba, p. 265 ; CROSSE (2).

†*Melanopsis vicentina*, n. sp., p. 135, pl. iv, figs. 1 & 1b ; †*M. amphora*, n. sp., p. 136, pl. v, figs. 2 & 2b ; OPPENHEIM (2).

PLEUROCERIDÆ.

Goniobasis crandalli, p. 301, pl. v, figs. 4 & 5 ; PILSBRY (1).

LITTORINIDÆ.

†*Holopea grandis*, n. sp., p. 177, pl. iii, figs. 1a, b ; CALVIN.

Lacuna pumilia, n. sp., from St. Helena, p. 285, pl. xxiii, fig. 31 ; SMITH (7).

Littorina helenæ, n. sp., p. 283, pl. xxi, fig. 19 ; SMITH (7). *L. littoria* var. *unicarinata* ; RAEYMAEKERS. *L. trachiformis* var., p. 491, pl. xxx, fig. 2, from Fernando Noronha ; SMITH, *vide* RIDLEY.

†*Pseudogibbula*, n. g. : *P. duponti*, n. sp., p. 570, pl. i, figs. 2-6, from Congo ; DAUTZENBERG.

FOSSARIDÆ.

Fossarus (Couthonyia) dentifer, n. sp., p. 285, pl. xxiii, fig. 32 ; *F. (C.) leviusculus*, n. sp., from St. Helena, p. 285, pl. xxiii, fig. 33 ; SMITH (7).

SOLARIIDÆ.

Benthonella (Dall, 1889) : *B. gaza*, p. 338, pl. xi, fig. 5 ; DALL (2).

†*Ecculiomphalus triangulus*, n. sp., p. 29, pl. i, figs. 5-9 ; WHITFIELD.

Euomphalus ?, p. 104, pl. iv, fig. 9 ; FOORD.

†*Euomphalus perkinsi*, n. sp., p. 30, pl. i, figs. 10-14 ; WHITFIELD.

Solarium mediterraneum, new from British waters ; NORMAN (2). *S. ordinarium*, n. sp., from St. Helena, p. 281, pl. xxi, figs. 17-17b ; SMITH (7).

LITIOPIDÆ.

Diala fuscipicta, n. sp., from St. Helena, p. 286, pl. xxi, fig. 20 ; SMITH (7).

RISSOIIDÆ.

Alvania disparilis, n. sp., p. 146 ; MONTEROSATO.

Barlecia congenita, n. sp., St. Helena, p. 290, pl. xxi, fig. 25 ; *B. wallichii*, n. sp., from St. Helena, p. 311, pl. xxiv, fig. 19 ; SMITH (7).

Rissoa cala, n. sp., p. 288, pl. xxi, fig. 21 ; *R. ephamella*, n. sp., p. 288, pl. xxi, fig. 22 ; *R. glypta*, n. sp., p. 288, pl. xxiii, fig. 39 ; *R. eritima*, n. sp., p. 289, pl. xxiii, fig. 40 ; *R. agapeta*, n. sp., p. 289, pl. xxi, fig. 23 ; *R. compsa*, n. sp., p. 289, pl. xxiii, fig. 41 ; *R. wallichii*, n. sp., p. 289, pl. xxi, fig. 24 ; *R. perfecta*, n. sp., p. 290, pl. xxiii, fig. 42 ; *R. varicifera*, n. sp., p. 290, pl. xxiv, figs. 1 & 1a ; *R. pseustes*, n. sp., p. 290, pl. xxiv, fig. 2 : from St. Helena ; *id.* (7). *R. platia*, n. sp., from St. Helena, p. 309, pl. xxiv, fig. 13 ; *R. atomus*, n. sp., p. 309, pl. xxiv, fig. 14 ; *R. vaga*, n. sp., p. 309, pl. xxiv, fig. 15 ; *R. simulans*, p. 310, pl. xxiv, fig. 16 ; *R. ordinaria*, n. sp., p. 310, pl. xxiv, fig. 17 ; *R. æqua*, n. sp., p. 310, pl. xxiv, fig. 18 ; *id.* (7).

†*Rissoina greppini*, n. sp., p. 89, pl. xi, fig. 8 ; LORIOI (2). *R. melissi*, n. sp., from St. Helena, p. 286, pl. xxiii, fig. 34 ; *R. turoni*, n. sp., p. 286, pl. xxiii, fig. 35 ; *R. decipiens*, n. sp., p. 287, pl. xxiii, fig. 36 ; *R. congenita*, n. sp., p. 287, pl. xxiii, fig. 37 ; *R. helenæ*, n. sp., p. 287, pl. xxiii, fig. 38 ; SMITH (7).

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Amnicola america, n. sp., *A. lustrica*, n. sp., *A. sheldoni*, n. sp. ; PILSBRY (5).

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Hydrobia : criticism on new forms ; WILLIAMS (5).

Hydrobia : British forms ; SMITH (2).

Hydrobia : notes on British forms ; MARSHALL (1).

Hydrobia : distribution and habits of British forms ; JENKINS (1).

Lithoglyphus naticoides ; habitat ; FRIEDEL.

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VALVATIDÆ.

Valvata piscinalis: anatomy and development ; BERNARD (2).

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Ampullaria belizensis, n. sp. (Belize), p. 110 ; *A. yucatanensis*, n. sp. (Mexico), p. 110 ; *A. innexa*, n. sp. (Mexico), p. 111 ; *A. occlusa*, n. sp. (Guatemala), p. 111 ; *A. lemniscata*, n. sp. (Belize), p. 112 ; *A. monacha*, n. sp. (Mexico), p. 113 ; *A. erogata*, n. sp. (Mexico), p. 113 ; *A. eumicra*, n. sp. (Mexico), p. 113 ; CROSSE & FISCHER (2).

Ampullaria: epidermis ; *id.* (3).

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†*Cardiostoma dentiferum*, n. sp., p. 135, pl. iv, figs. 5 & 5*b* ; OPPENHEIM (2).

†*Coptochilus sandbergeri*, n. sp., p. 133, pl. ii, figs. 9 & 9*a* ; *id.* (2).

†*Craspedotropis resurrecta*, n. sp., p. 133, pl. ii, figs. 14 & 14*c* ; *id.* (2).

†*Cyathopoma eocœnum*, n. sp., p. 135, pl. ii, figs. 16 & 16*c* ; OPPENHEIM (2).

Cyclotus difficillimus, n. sp., Lüshau, p. 119 ; SCHMACKER & BÆTTGER.
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Lagocheilus grande, n. sp., from Philippines, p. 207 ; *L. stenomphalum*, n. sp., *id.* p. 208 ; *L. bifimbriatum*, n. sp., *id.* p. 208 ; MÖLLENDORFF (3).
L. longipilum, n. sp., p. 159, pl. vi, figs. 9 & 9*a*, *b*, from Java ; BÆTTGER (4).

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Opisthostoma pulchella, n. sp., from Borneo, p. 245, pl. vii, fig. 1 ; *O. hosei*, n. sp., p. 246, pl. vii, fig. 2 ; GODWIN-AUSTEN.

Palaina morangensis, n. sp., from Philippines ; *P. porrecta*, n. sp., p. 209 ; MÖLLENDORFF (3).

Pterocyclus sluiteri, n. sp., from Java, p. 161, pl. vi, figs. 10 & 10*a*, *b* ; BÆTTGER (4).

Pupina (Eupupina) bipalatalis, n. sp., from Java, p. 156, pl. vi, figs. 6 & 6*a*, *b* ; *P. (E.) sucinacia*, n. sp., p. 157, pl. vi, figs. 7 & 7*a*, *b* ; *P. (E.) treubi*, n. sp., p. 157, pl. vi, figs. 8 & 8*a*, *b* ; BÆTTGER (4).

Pupina nana, n. sp., from Philippines, p. 209 ; MÖLLENDORFF (3).

CYCLOSTOMATIDÆ.

- Adamsiella* from Cuba, p. 280 ; CROSSE (2).
†*Blasospira*, n. g., from Cuba, p. 280 ; *id.* (2).
Choanopoma from Cuba, p. 269 ; *id.* (2).
Chondropoma from Cuba, p. 288 ; *id.* (2).
†*Chondropoma styx*, n. sp., p. 134, pl. iii, figs. 2 & 2b ; OPPENHEIM (2).
Cistula from Cuba, p. 285 ; CROSSE (2).
Colobostylus from Cuba, p. 302 ; *id.* (2).
Ctenopoma from Cuba, p. 274 ; *id.* (2).
Cyclostoma elegans alive in Essex ; FRENCH.
Cyclostoma hanningtoni, n. sp., p. 581, pl. lvi, fig. 5 ; SOWERBY.
†*Cyclostoma (Colobostylus) marcellanum*, n. sp., p. 133, pl. iii, figs. 4-4c ;
OPPENHEIM (2).
†*Cycloopsis vicentina*, n. sp., p. 131, pl. iii, figs. 5-5g ; *id.* (2).
Licina from Cuba, p. 269 ; CROSSE (2).
Otopoma ? æquatorium, n. sp., Equatorial Africa, p. 68 ; *O. anaglyptum*,
n. sp., Equator, Africa, p. 69 ; MORELET.
Tropidophora nigroteninata, n. sp., from Nossi Bé, p. 94 ; BÆTTGER (2).
Tudora from Cuba, p. 300 ; CROSSE (2).
†*Xenopoma*, n. g., from Cuba, p. 282 ; *id.* (2).

ACICULIDÆ.

Acme fusca in the Pyrénées-Orientales ; FAURE.

TRUNCATELLIDÆ.

Truncatella from Cuba, p. 303 ; CROSSE (2).

CAPULIDÆ.

- †*Calyptraeide* from American carboniferous ; synopsis ; KEYES (3).
†*Capulus annulatus*, n. sp., p. 200, pl. xxv, fig. 17a, b ; YOKOYAMA. †*C. cassidarius*, n. sp., p. 177, pl. xviii, figs. 10a, b & 11a, b ; *id.*
†*C. occident* (Walcott), †*C. paralius* (W. & W.), †*C. cyrtolites* (McC.),
†*C. fissurella* (Hall), †*C. latus* (Keyes), †*C. quincyensis* (McC.), †*C. acutirostris* (Hall), †*C. spinigerus* (Worth), †*C. formosus* (Keyes), †*C. biserialis* (Hall), †*C. equilaterus* (Hall), †*C. infundibulum* (M. & W.),
†*C. obliquus* (Keyes), †*C. tribulosus* (White), †*C. chesterensis* (M. & W.),
†*C. parvus* (Swallow), were formerly erroneously referred to *Platyceras* ;
KEYES (2). †*C. sulcatinus*, n. sp., p. 175, pl. ii, figs. 12a & b ; *id.* (3).
Crepidula glauca ; DALL (4).
†*Platyceras* and *Capulus* : generic relations ; KEYES (2).
Strophostylus, g. ; KEYES (5).

NATICIDÆ.

†*Ampullina* ; *Cernina*, subg. : table of relations of species of *Cernina*
and *Globularia* ; SACCO, (1) p. 41.

†*Ampullina*. *Crommium* subg. : †*C. ferrugineum*, n. vars. *italica*, *rugosoides*, *acuminatoides*; SACCO, (1) p. 41.

Table of species relations of *Crommium*; *id.* (1) p. 42.

†*Ampullina*. *Euspirocrommium* n. subg. : †*E. elongatum*, n. var. *degensis*; *id.* (1) p. 42.

Table of species; *id.* p. 42.

†*Ampullina*. *Globularia*, subg. : †*G. gibberosa*, n. vars. *appenninica*, *globoides*, *postspatula*, *oviformis*; SACCO (1).

†*Cryptostoma*, subg. of *Sigaretus* : †*C. sigaretoides*, n. sp., †*C. striatum*, n. vars. *striatissima*, *circumdepressa*, *perelliptica*, p. 39; *id.* (1).

Table of species relations of *Cryptostoma*, *Sigaretus*, &c., p. 40; *id.* (1).

†*Megatylotus* subg. : †*M. crassatinus*, n. var. *rotundula*; *id.* p. 43.

Table of relations of *Natica* species; *id.* p. 30.

†*Natica dumblei*, n. sp., p. 404, pl. xi, fig. 3; HEILPRIN (1). †*N. epiglopardalis*, n. sp.; SACCO, (1) p. 29. †*N. epiglottina*, n. vars. *taurinia*, *pseudoepiglottina*, *millepunctatoides*, *basipicta*, *pliocarinata*; *id.* †*N. millepunctata*, n. vars. *miocontorta*, *tauropicta*, *miopunctatissima*, *pliotertonensis*, *epigloafuniculata*, *subfuniculosa*, *tigrina*, *magnocunctata*, *pliomaculata*, *fulguropunctata*, *epiglottinoformis*; *id.* (1) pp. 28 & 29. †*N. (Lunatia) omeccatti*, n. sp., p. 169, pl. xxv, figs. 1 & 1a; FELIX. *N. turtoni*, n. sp., St. Helena, p. 269, pl. xxi, figs. 14 & 14a; *N. sanctæ-helenæ*, n. sp., p. 270, pl. xxi, fig. 16; SMITH (7). *N. verdati*, n. sp., p. 96, pl. xii, figs. 4 & 5; †*N. ursicina*, n. sp., p. 97, pl. xii, fig. 6; †*N. blauenensis*, n. sp., p. 98, pl. xii, figs. 7-9; LORIOL (2). †*N. virguloides*, n. sp.; †*N. hemiclausula*, n. var. *exturbinooides*; †*N. pulchella*, n. var. *astensis*; table of species relations, p. 32; SACCO (1).

Natica funiculata from Annam; CROSSE & FISCHER (4). †*N. infelix*, n. sp., p. 27; †*N. infelix* n. var. *sasselliana*; SACCO (1). †*N. javaschovi*, n. sp., p. 339, pl. v, fig. 1; TOULA.

†*Natica (Ampullina) mihielensis*, p. 91, pl. xi, fig. 11, = *Nerita deshayesca buvignies*; *N. euryta*, n. sp., p. 94, pl. xi, figs. 16 & 17; *N. matheyi*, n. sp., p. 94, pl. xii, fig. 1; *N. antharis*, n. sp., p. 95, pl. xii, figs. 2 & 3; LORIOL & KOBY.

†*Natica (Lunatia) ezoensis*, n. sp., p. 207, pl. xxv, figs. 19a & b; YOKOYAMA.

†*Naticina* : †*N. catena*, n. vars. *prohelicina*, *ampullinoides*, *cyclostomoides*, *varians*, *probonomensis*, *helicina*, *sigaretornata*; SACCO, (1) p. 30.

†*Neverita*, subg. : †*N. josephina*, n. vars. *antiqua*, *priscodepressa*, *clausodepressa*, *clausoelata*, *poliniceoides*, *pliospiralata*, pp. 34 & 35; SACCO (1).

†Table of species of *Neverita*, p. 35; *id.*

†*Payraudeautia*, subg. : †*P. intricata*, n. var. *miocenica*, p. 33; *id.* (1).

Table of species relations; *id.*

†*Polinices*, subg. : *P. turbino-appenninica*, n. sp., p. 35; †*P. mamillaris*, n. var. *prænuntia*; †*P. submamillaris*, n. vars. *miocinflata*, *miopenita*, *mioclausula*, pp. 35 & 36; †*P. miocolligens*, n. sp., *id.* n. var. †*pseudomamilla*; †*P. vertomamilla*, n. sp.; †*P. proredempta*, n. sp., *id.* n. vars. †*subnaticoides*, †*tauromamilla*; †*P. redempta*, n. var. *vertoconvexa*; †*P. redempto-aurantia*, n. sp.; SACCO (1) p. 36.

Species relations of *Polinices*, p. 37 ; *id.* (1).

†*Sigaretus*. ↓ *Ampullonatica*, n. subg., p. 40 ; *id.* (1).

†*Sigaretus*. *Sigaretotrema*, n. subg.: †*S. michaudi*, n. vars. *clausula*, *eunaticinoides*, *pseudoaquensis*, p. 38 ; †*S. aquensis*, n. vars. *precedens*, *perinflata*, *longotriangula*, *patula*, *conicolonga*, *tauroinflata*, p. 38 ; †*S. oligopolitus*, n. sp., p. 38 ; †*S. concavus*, n. var. *postuquensis* ; †*S. cryptostomoides*, n. sp., n. var. *colligens* ; *id.* (1).

‡†*Tectonatica*, n. subg. of *Natica*, p. 33 ; SACCO (1).

ADEORBIIDÆ.

Adeorbis sincera, n. sp., p. 338, pl. xii, fig. 2 : DALL (3).

Adeorbis subcarinatus at Teignmouth ; BYNE.

SCALARIIDÆ.

Aclis angulata, n. sp., St. Helena, p. 280, pl. xxiii, fig. 28 ; *A. simillima*, n. sp., p. 280, pl. xxiii, fig. 29 ; *A. didyma*, n. sp., p. 281, pl. xxiii, fig. 30 ; SMITH (7).

†*Gyroscala stueri*, n. sp. ; BOURY (1).

Scalidae of Italian Miocene and Pliocene ; BOURY (2).

†*Scala*. *Opalia*, subg. : †*O. de-bouryi*, n. sp., p. 158 ; DALL (1).

†*Scalaria hosinoi*, n. sp., p. 85, pl. i, fig. 1a-c ; LIENENKLAUS. *S. mellissi*, n. sp., from St. Helena, p. 273, pl. xxiii, fig. 13 ; *S. sancte-helenæ*, n. sp., p. 274, pl. xxiii, fig. 14 ; *S. commoda*, n. sp., p. 274, pl. xxiii, fig. 15 ; *S. atomus*, n. sp., pl. xxiii, fig. 16 ; SMITH (7).

EULIMIDÆ.

Amaurella canaliculata, n. sp., St. Helena, p. 280, pl. xxiii, fig. 27 ; SMITH (7).

Eulima ephamilla and *E. latipes*, from England ; MARSHALL (3). *E. fuscescens*, n. sp., p. 278, pl. xxiii, fig. 24 ; *E. atlantica*, n. sp., p. 278, pl. xxiii, fig. 25 ; *E. germana*, n. sp., p. 279, pl. xxiii, fig. 26 ; *E. (Subularia) fuscopunctata*, n. sp., p. 280, pl. xxi, fig. 18, from St. Helena ; SMITH (7).

†*Niso (Vetotuba) brazieri*, n. sp., p. 62, pl. viii, figs. 4 & 5, pl. ix, figs. 2 & 3 ; ETHERIDGE.

‡*Sabinella*, n. g., allied to *Eulima*, p. 160, from Palermo ; MONTEROSATO.

PYRAMIDELLIDÆ.

Odostomia glaphyra, n. sp., from St. Helena, p. 278, pl. xxiii, fig. 23 ; SMITH (7).

Turbonilla haroldi, n. sp., from St. Helena, p. 275, pl. xxiii, fig. 18 ; *T. assimilans*, n. sp., p. 276, pl. xxiii, fig. 19 ; *P. truncatelloides*, n. sp., p. 276, pl. xxiii, fig. 20 ; *T. brachia*, n. sp., p. 276, pl. xxiii, fig. 21 ; *T. (Dunkeria) eritima*, n. sp., p. 276, pl. xxiii, fig. 22 ; SMITH (7).

Turbonilla (?) terebriformis, n. sp., p. 95, Central Africa ; *id.* (5).

PROSOBRANCHIATA SCUTIBRANCHIATA.

PROSERPINIDÆ.

Proserpina from Cuba, p. 305 ; CROSSE (2).

HELICINIDÆ.

Alcadia from Cuba, p. 324 ; CROSSE (2).

Eutrochatella from Cuba, p. 306 ; *id.* (2).

Helicina albenscens, n. sp., p. 285, pl. iii, fig. 5 ; *H. hyalina*, n. sp., p. 285, pl. iii, fig. 6 ; *H. virido-colare*, n. sp., p. 285, pl. iii, fig. 7 ; HARTMAN. *H. dentoni*, n. sp., p. 186 ; PILSBRY (12). *H. hakodadiensis*, n. sp., p. 286, pl. iii, fig. 8 ; *H. dominicensis*, n. sp., p. 286, pl. iii, fig. 9 ; *H. biterniata*, n. sp., p. 286, pl. iii, fig. 10 ; *H. garretiana*, n. sp., p. 286, pl. iii, fig. 11 ; HARTMAN.

Helicina from Cuba, p. 311 ; CROSSE (2).

NERITIDÆ.

†*Nerita thurmanni*, n. sp., p. 102, pl. xiii, figs. 12 & 13 ; †*N. constricta*, p. 105, pl. xiii, figs. 17 & 18 ; †*N. ponderosa*, p. 106, pl. xii, fig. 19 ; †*N. doris*, p. 108, pl. xiii, figs. 7 & 8 ; †*N. reticulata*, p. 111, pl. xiii, fig. 1 ; LORIOL & KOBY.

Neritina from Cuba, p. 326 ; CROSSE (2).

Neritina stumpffi, n. sp., from Nossi-Bé, p. 99 ; BÆTTGER (2).

MACLURITIDÆ.

†*Maclurea manitobensis*, n. sp., p. 75, pls. xii & xiii, figs. 1 & 2 ; WHITEAVES.

NERITOPSIDÆ.

†*Naticopsis desertorum*, n. sp., p. 441, pl. xxvii, fig. 22 ; WALTHER.

TURBINIDÆ.

†*Aizyella*, n. g. Type, †*Phasianella herouvalensis* (Eocene), p. 3 ; COSSMANN.

†*Cyclonema* (?) *australis*, n. sp., p. 63, pl. ix, figs. 4 & 5 ; ETHERIDGE.

Leptothyra bournei, n. sp., p. 203, from Ireland ; NORMAN (2).

†*Oriostoma northi*, n. sp., p. 64, pl. ix, figs. 6 & 7 ; ETHERIDGE.

Turbo (*Colonia*) *admissus*, p. 294, pl. xxii, fig. 4, St. Helena ; *T. (C.) incertus*, n. sp., from St. Helena, p. 311, pl. xxiv, figs. 21 & 21a ; SMITH (7).

†*Turbo ursicinus*, n. sp., p. 118, pl. xiv, fig. 10 ; †*T. gerontes*, n. sp., p. 124, pl. xv, fig. 6 ; LORIOL & KOBY.

†*Turbo* from W. Australia, p. 243, pl. ix, fig. 3 ; HUDDLESTON.

TROCHIDÆ.

Calliostoma platinum, n. sp., p. 343, pl. vii, fig. 2; *C. riöensis*, n. sp., p. 345, pl. xii, fig. 5; DALL (2).

†*Clydonochilus*, n. g.: *C. mariei*, n. sp., from Comoros Archipelago; FISCHER (4).

Euchelus alabastrum, p. 344, with woodcut; PILSBRY (2).

Gibbula tantilla, n. sp., p. 144, from Palermo; MONTEROSATO.

†*Halistylus*, n. subg., *H. columna*, n. sp., p. 341, pl. ix, fig. 7; DALL (2).

Jujubinus ? *leviusculus*, n. sp., p. 145, from Palermo; MONTEROSATO.

Monodonta labio var. *granulata*, fig. 1; PILSBRY (2).

†*Photinula* ? *trochoides*, n. sp., p. 613; BLANCKENHORN (3).

Solariella oxybasis, n. sp., p. 352, pl. xii, fig. 6; *S. actinophora*, p. 353, pl. xii, figs. 8 & 11; DALL (2).

†*Trochus* (*Scalctrochus*) *lindströmi*, n. sp., pl. viii, figs. 1 & 2; ETHERIDGE.

Turricula macdonaldi, n. sp., p. 368, pl. vii, fig. 7; DALL (2).

DELPHINULIDÆ.

†*Delphinula matheyi*, n. sp., p. 146, pl. xvii, fig. 1; LORIO & KOPY.

Liotia arenula, n. sp., St. Helena, p. 294, pl. xxiv, fig. 6; *L. admirabilis*, p. 245, pl. xxiv, fig. 7; SMITH (7).

†*Straparollus lativolvus*, n. sp., p. 178, pl. i, fig. 1, pl. ii, fig. 1; †*S. bicarinatus*, n. sp., p. 179, pl. iii, figs. 2a & b; †*S. tricarinatus*, n. sp., p. 179, pl. ii, figs. 2a & b; CALVIN.

†*Straparollus*: various forms; relations between *Straparollus* and *Euomphalus*; MCCREERY.

CYCLOSTREMATIDÆ.

Teinostoma ? *abnorme*, n. sp., p. 293, pl. xxiv, fig. 5; SMITH (7).

COCCULINIDÆ.

Cocculina pocillum, n. sp., p. 340; DALL (2).

PLEUROTOMARIIDÆ.

†*Ditremaria depressa*, n. sp., p. 9, pl. i, fig. 9; GIOLI. †*D. thurmanni*, n. sp., p. 163, pl. xviii, figs. 5 & 6; LORIO & KOPY.

†*Euomphalopterus subalatus* var. *conoidea*, n. sp., p. 772, pl. xix, fig. 5; OEHLERT (1).

†*Helicotoma similis*, n. sp., p. 31, pl. i, figs. 1 & 2; WHITFIELD.

†*Pleurotomaria* ?, p. 104, pl. iv, figs. 10 & 10a; FOORD.

†*Pleurotomaria (Rhaphistoma) attleborensis*, n. sp., p. 30, pl. ii, fig. 11 ;
SIALER & FOERSTE.

†*Pleurotomaria difficilis*, n. sp., p. 33, figs. 15 & 16 ; WHITFIELD.

Scissurella jucunda, n. sp., from St. Helena, p. 311, pl. xxiv, figs. 22
& 22a ; SMITH (7).

BELLEROPHONTIDÆ.

†*Bellerophon carinatus*, n. sp., p. 439, pl. xxvii, fig. 20 ; *B. antonii*, n. sp.,
p. 440, pl. xxvii, fig. 19 ; WALTHER. *B. decussatus* from W. Australia ;
FOORD.

†*Bucania perornata*, n. sp., p. 180, pl. iii, figs. 3a & b ; †*B. cyclostoma*,
n. sp., p. 181, pl. i, figs. 2a & b ; CALVIN.

†*Cyrtolites youngi*, n. sp., p. 289, pl. vi, fig. 7 ; FOERSTE.

FISSURELLIDÆ.

†*Emarginula bælschei*, n. sp., p. 92, pl. i, figs. 2a & b ; LIENENKLAUS.

†*Fissurella kobyi*, n. sp., p. 153, pl. xvii, fig. 7 ; LORIOI & KOBY.

Parmophorus (Scutum) : nervous system ; BOUTAN.

Scutum : mantle edge ; PELSENEER (8).

ACMÆIDÆ.

Acmaea noronhensis, n. sp., p. 495, pl. xxx, figs. 3 & 3a, Fernando
Noronha ; SMITH, *vide* RIDLEY.

†*Palæacmaea barroisi*, n. sp., p. 774, pl. xix, figs. 3 & 3a ; OEHILERT (1).

PATELLIDÆ.

†*Helcion thurmanni*, n. sp., p. 155, pl. xvii, fig. 13 ; LORIOI & KOBY.

†*Patella matheyi*, n. sp., p. 155, pl. xvii, figs. 14-16 ; *id.*

POLYPLACOPHORA.

Chiton (Ischnochiton) caribbæorum, p. 496, pl. xxx, figs. 5 & 5a, Fernando
Noronha ; SMITH, *vide* RIDLEY.

Chitonellus : structure of foot ; PELSENEER (6).

APLACOPHORA.

Chaetoderma : histology ; WIRÉN (2).

Chaetoderma nitidulum : anatomy ; *id.* (1).

↓ *Lepidomenia hystrix*, n. g. & sp., p. 2, pls. i & ii; KOWALEVSKY & MARION.

Memoir on; *iid.*

Neomenians: organs of circulation; PRUVOT (2).

Proneomenidæ: *P. vagans*, n. sp., pls. iii-v, general anatomy; *P. desiderata*, n. sp., pl. v; *P. aglaophenia*, n. sp., pl. vi; *P. gorgonophila*, pl. vii; KOWALEVSKY & MARION.

SCAPHOPODA.

DENTALIIDÆ.

Cudulus albicornatus, n. sp., p. 295, pl. ix, fig. 8, from U. S. A.; DALL (2).

Dentalium megathyris, n. sp., p. 293, pl. ix, fig. 1, from U. S. A.; *id.* (2).

LAMELLIBRANCHIATA.

General.

Cristalline style: BARROIS.

Pelecypoda: JACKSON (2).

Pelecypoda: ancestral kidney; PELSENEER (1).

Pelecypoda: endothelium of the gills; MÈNÉGAUX.

Hermaphrodite forms: PELSENEER (4).

Nervous system; *id.* (2).

Palleal apertures; *id.* (3).

Phylogeny; JACKSON (1).

From Silurian of S.W. France; BIGOT,

Type fossils in Bristol Museum, pp. 371, 372, 411, 412, & 414; WILSON (2).

†Shells resembling *Iridinea*; †*I. oblonga*, n. sp., p. 557; JONES (2).

OSTRÆIDÆ.

†*Exogyra ptychodes*, n. sp., p. 176, pl. xxvii, figs. 4 & 4a; †*E. spiralis*, n. sp., p. 177; †*E. subplicifera*, n. sp., p. 177, pl. xxvii, figs. 6 & 7; FELIX.

Gryphæa, p. 317; JACKSON (1).

Gryphæa mexicana, n. sp., p. 179, pl. xxvii, figs. 30 & 30a; FELIX.

Ostrea: development, p. 294; JACKSON (1).

†*Ostrea* (*Gryphæa*) *deickei*, n. sp., p. 179; †*O. clathrata*, n. sp., p. 180; MAYER-EYMAR (4).

†*Ostrea* (*Alectryonia*) *frondiformis*, n. sp.; †*O. (A.) lenzi*, n. sp., p. 289; †*O. (A.) supphonis*, n. sp., p. 290; †*O. ægyptiaca*, n. sp., p. 290; †*O. ascher-soni*, n. sp.; †*O. fluctuosa*, n. sp., p. 291; MAYER-EYMAR (5).

†*Ostrea (Exogyra) haueri*, n. sp., p. 340, pl. v, fig. 3 ; TOULA.

†*Ostrea livingstoni*, n. sp. ; †*O. queruniana*, n. sp., p. 297 ; †*O. ismaeli*, n. sp. ; †*O. caillaudi*, n. sp., p. 293 ; †*O. protracta*, n. sp. ; †*O. stanleyi*, n. sp., p. 294 ; †*O. regalis*, n. sp. ; †*O. ramosa*, n. sp., p. 295 ; MAYER-EYMAR (5). †*O. ventilabrum*, n. sp. ; †*O. restans*, n. sp., p. 296 ; †*O. flabelluliformis*, n. sp. ; †*O. aviola*, n. sp., p. 297 ; †*O. sororcula*, n. sp. ; †*O. tihana*, n. sp., p. 298 ; *id.* (5).

†*Ostrea (Alectryonia) pterygota*, n. sp. ; †*O. (A.) janigena*, n. sp., p. 177 ; †*O. junkeri*, n. sp., p. 178 ; †*O. velum*, n. sp., p. 179 , *id.* (4).

Oyster-culture ; FOWLER ; LORD MONTAGU.

Oyster-disease caused by *Polydora* ; nature and remedies ; WHITELEGGE (1).

Oyster : generative organs ; BOURNE (2).

ANOMIIDÆ.

Anomia : anatomy, p. 354 ; JACKSON (1).

DIMYIDÆ.

†*Dimya subrotunda*, n. sp., p. 163, pl. xxv, figs. 9 & 9a ; FELIX.

LIMIDÆ.

†*Lima cornatulicosta*, n. sp., p. 178, pl. xxvii, figs. 1, 1a, 3, 3a, & 5 ; FELIX.
†*L. valmariannæ*, n. sp., p. 80, pl. ii, fig. 4 ; †*L. stabilei*, n. sp., p. 80, pl. ii, fig. 5 ; PARONA. †*L. vigiliæ*, n. sp., p. 16, pl. i, figs. 15 & 15a ; GIOLI.

PECTINIDÆ.

†*Aviculopecten ægypticus*, n. sp., p. 437, pl. xxiv, fig. 11 ; WALTHER.
†*A. tenuicollis*, p. 103, pl. v, fig. 9 ; FOORD.

†*Pecten*, sp. from W. Australia, p. 244, pl. ix, fig. 5 ; HUDDLESTON.

†*Pecten* sp., p. 174, pl. xviii, figs. 1 & 2 ; YOKOYAMA.

Pecten : shell, p. 342 ; JACKSON (1).

Pecten : anatomy and habit, p. 333 ; *id.* (1).

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†*Inoceramus naumanni*, n. sp., p. 174, pl. xviii, figs. 3, 4a, b, & 5; †*I.* sp., *id.* figs. 6, 7a & b; *id.* †*I. montezumæ*, n. sp., p. 180, pl. xxviii, figs. 9 & 10; FELIX.

†*Margarita funiculata*, n. sp., p. 197, pl. xx, figs. 13a, b, c, & d; YOKOYAMA.

†*Pinna australis*, n. sp., p. 244, pl. ix, fig. 6; HUDDLESTON.

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†*Modiola*, n. sp., p. 245, pl. ix, fig. 8; HUDDLESTON.

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†*N. picturata*, n. sp., p. 194, pl. xxv, figs. 1 & 2a, b; †*N. milnei*, n. sp., p. 195, pl. xxii, figs. 2a-c & 3; †*N. poronaica*, n. sp., p. 195, pl. xxv, fig. 3a-c; YOKOYAMA.

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fig. 4; BIGOT. †*M. oblonga*, n. sp., p. 222, fig. 1; †*M. subparallela*, n. sp., p. 273, fig. 2; *M. milleri*, n. sp., p. 274, fig. 3; ULRICH (1). †*M. oviformis*, n. sp., p. 276, fig. 4; †*M. simulatrix*, n. sp., p. 277, fig. 5; *M. pulchella*, n. sp., p. 278, fig. 6; †*M. subtruncata*, n. sp., p. 279, fig. 7; *id. t. c.* †*M. prima*, p. 793, pls. xxii, fig. 1, & xxiii, fig. 2; BIGOT.
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†*Whitella*, n. gen., allied to *Cypricardites*, †*W. obliquata*, n. sp., p. 177, fig. 13; †*W. umbonata*, n. sp., p. 179, fig. 14; †*W. compressa*, n. sp., p. 180, fig. 15; ULRICH (2). †*W. scofieldi*, Ulrich, p. 382, fig. 16; †*W. truncata*, n. sp., p. 385, fig. 17; †*W. subovata*, n. sp., p. 386, fig. 18; *id.* (3)

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† *Cypriocardella elongata*, n. sp., p. 226, pl. iv, figs. 3–4a ; † *C. subovata*, n. sp., p. 227, pl. iv, figs. 9 & 9a ; BEISHAUSEN.

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ROEBUCK (4), COLLINGE (7): Spofforth, *Mollusca*; NELSON; Upper Swaledale, *Mollusca*; ROEBUCK (3). Essex: land and freshwater *Mollusca*; CROUCH: Ingold, living *Cyclostoma elegans*; FRENCH. Lincolnshire: *Clausilia rolpheii* at Well Vale; ROEBUCK (2): Trent shells; ROBERTS.

FRANCE. — Catalogue of *Pseudanodonta* and *Anodonta*; LOCARD. Pyrénées Orientales: *Acme fusca*; FAURE. Roussillon: land Molluscs; BUCQUOY. Allier: land and freshwater shells; AUCLAIR.

GERMANY. — Presence of *Helix obvia*; MARTENS (4). Nassau: shells; BORCHERDING. Graubünden: *Mollusca*; STEIN.

AUSTRIA. — Maehren: *Mollusca*; ULICNÝ.

BOHEMIA. — Land shells; KLIKA.

TYROL. — New *Pupa*; GREDLER (3).

RUSSIA. — Perm.: *Mollusca*; BËTTGER (3).

2. *Circum-Mediterranean Region.*

TRIPOLIS. — Land Snails; MARTENS (3).

STYRIA. — Gastropods; PFEFFER, P.

ITALY. — *Mollusca*; SCHREDER.

GREECE. — *Clausilia* species; BËTTGER (1). Land Snails; SIMROTH (2).

SYRIA. — New shells; NAEGELE & BËTTGER, NAEGELE.

4. *Chinese Region.*

Land shells; GREDLER (1).

HAINAN I. — Land and freshwater shells; FISCHER (2).

CHINA AND JAPAN. — Land shells; SCHMACKER & BËTTGER.

II. — PALÆOTROPICAL AFRICAN ZONE.

Slugs from Africa; SIMROTH (2).

SAHARA. — New subfossil land and freshwater shells: FISCHER (5).

Central Africa.

List of shells collected by Emin Pasha; SMITH (6).

Land shells from Pondo-land; MARTENS (2).

EQUATORIAL AFRICA. — Land shells; MORELET.

LAKE TANGANYIKA. — Shells; BOURGUIGNAT.

CONGO. — *Mollusca*; DUPONT, DAUTZENBERG.

South Africa.

Terrestrial *Mollusca*; MELVILL & PONSONBY. *Achatina*, list of species; SMITH (7).

Malagasy Region.

NOSSI-BÉ. — Land and freshwater *Mollusca*; BËTTGER (2).

III.—PALÆOTROPICAL ORIENTAL ZONE.

- EAST INDIA.—New land shells ; PILSBRY (12).
 CAMBOGE AND SIAM.—Shells ; MORELET.
 BORNEO.—3 new species of land shells ; GODWIN-AUSTEN.
 PHILIPPINES.—*Hemitrichia* ; MÖLLENDORFF (2). New land shells ;
id. (3).
 JAVA.—Freshwater and brackish *Mollusca* ; BÆTTGER (4).

IV.—AUSTRALIAN ZONE.

- N. S. WALES.—*Mollusca* of land and freshwater ; MUSSON. Wide range of *Agriolimax levis* ; HEDLEY (1). *Vaginula leydigii* and *V. hedleyi* ; *id.* (1).
 NEW ZEALAND.—Slugs ; SIMROTH (2).
 SANDWICH IS.—Land shells ; GULICK.

VI.—NEOTROPICAL ZONE.

- ANTILLES.—Terrestrial and fluviatile shells ; CROSSE (2).
 CUBA.—Land and freshwater shells, with an account of the characters of the fauna, p. 329 ; CROSSE (2).
 BRITISH GUIANA.—*Mollusca* ; QUELCH.
 BRAZIL.—Revision of the *Unionidae* ; IHERING (3).

VII.—NEARCTIC ZONE.

- AMERICA.—*Mollusca* ; COCKERELL (2). New and little known *Mollusca* ; PILSBRY (7).
 UNITED STATES.—Air-breathing *Mollusca* ; BINNEY.
 COLORADO.—*Mollusca* list ; COCKERELL (7).
 SAN FRANCISCO.—Freshwater Molluscs ; COOPER.
 FLORIDA.—Shells ; JOHNSON.
 GUATEMALA AND MEXICO.—New species of *Ampullaria* ; CROSSE & FISCHER (2).
 QUEBEC.—*Mollusca* ; ANON.

MARINE MOLLUSCA.

- CUMBERLAND COAST.—*Cypræa moneta* ; CRAWSHAW.
 LIVERPOOL DISTRICT.—Nudibranchs ; HERDMAN & CHUBB.
 PLYMOUTH.—*Opisthobranchiata* ; GARSTANG.
 TENBY.—Shells ; CUNDALL.
 YORKSHIRE.—Marine *Mollusca* ; DAVIS.
 S.W. COAST OF IRELAND.—*Mollusca* ; BOURNE (1).

GULF OF MARSEILLES. — *Mollusca*; GOURRET. Nudibranchiates;
VAYSSIÈRE.

COAST OF HERAULT. — *Mollusca*; GRANGER.

PORTUGAL. — Cephalopods; GIRARD.

PALERMO. — Deep sea Molluscs; MONTEROSATO.

ASCENSION I. — Marine *Mollusca*; SMITH (9).

ST. HELENA. — Marine *Mollusca*; *id.* (8).

PORT WLADIMIR, ON THE MURMAN COAST. — *Mollusca*; PFEFFER, E. (1).

TONKIN. — Marine *Mollusca*; CROSSE & FISCHER (1).

TIZARD BANK, CHINA. — Shells; SMITH (3).

SUNDA SEA. — *Nudibranchiata*; BERGH (1).

JAVA. — Marine *Mollusca*; BETTGER (4).

Shells found in the shell-hills on the coast of Brazil; WOHLTMANN.

AUSTRALIA. — Marine *Mollusca*; WILSON (1). New *Mollusca*; COX.

MERIMBULA, N. S. WALES. — List of *Mollusca* trawled; BRAZIER.

PORT JACKSON, N. S. WALES. — List of *Mollusca*; WHITELEGGE.

GEOLOGICAL DISTRIBUTION.

TERTIARY.

Beds of Piedmont and Liguria: *Mollusca*; SACCO, BELLARDI.

Mollusca of Piedmont; SACCO (2).

Alsace: lists of fossils; MIEG, BLEICHER, & FLICHE.

New and imperfectly defined *Nautili*; FOORD & CRICK (3).

Post-Pliocene: Congo shells; DAUTZENBERG.

Pliocene of Italy: *Scalidæ*; BOURY (2).

Oligocene: *Mollusca* of Doberges; LIENENKLAUS.

Miocene of Italy: *Scalidæ*; BOURY (2).

Marine Miocene of Syria: fossils; BLANCKENHORN (3).

Upper Miocene of Montegibio: *Muricidæ*, *Tritonidæ*, and *Fusciolaridæ*;

TOLDO: *Buccinidæ*, *Purpuridæ*, and *Olividæ*; PANPANELLI.

Tertiary basin of Vienna: *Pleurotomidæ*; HOERNES.

Eocene: land and freshwater snails; OPPENHEIM (2).

Eocene of Texas: *Mollusca*; HEILPRIN (1).

Eocene: Paris shells; COSSMANN.

Eocene of Syria: fossils; BLANCKENHORN (2).

SECONDARY.

Mezozoic fossils from W. Australia; HUDDLESTON.

CRETACEOUS.

Nautili, new or imperfectly defined; FOORD & CRICK (3).

Cretaceous fossils of Japan, with many new species; YOKOYAMA.

Bohemian *Rudistes* ; POČTA.

List of Cretaceous fossils of Massachusetts, with figs. ; SHALER (1).

Cretaceous fossils of Mexico ; HEILPRIN (2), FELIX.

Upper Cretaceous of Syria : Pteropods ; BLANCKENHORN (1).

Neocomian fossils of Wororiewo ; PAVLOW (1).

Shells from Madagascar ; NEUMAYR.

Lower Cretaceous and Upper Jurassic : Russian and English fossils compared ; PAVLOW (2).

JURASSIC.

Nautili : new and imperfectly described species ; FOORD & CRICK (2, 3).

Fossils from the Couches Tithoniques de l'Ardèche ; TOUCAS.

Jurassic of Mexico : fossils ; FELIX.

Notes on fossils from Popielany in Lithuania ; SIEMIRADZKI (1).

Upper Jurassic : shells from Madagascar ; NEUMAYR.

Cephalopods of Poland ; SIEMIRADZKI (2).

Coralline Oolite ; Molluscs ; LORIOU (1, 2).

Inferior Oolite : Molluscs ; GIOLI : Ammonites ; BUCKMAN.

Lower Lias : shells from Lombardy ; PARONA.

TRIASSIC.

Estheria : JONES (1).

Trias of Vienna : a new *Cornularia* ; BITTNER.

PRIMARY.

CARBONIFEROUS.

Carboniferous Limestone of Arabia ; WALTHER.

Carboniferous of America : *Calyptræidæ* ; KEYES (3).

Carboniferous of W. Australia : Lamellibranchs, Gastropods, and Cephalopods ; FOORD.

DEVONIAN.

Devonian fossils of Angers ; OEHLERT.

List of Devonian fossils from Rhinelands ; MAURER.

Devonian Cephalopods ; FOORD.

Devonian Lamellibranchs ; BEISHAUSEN.

SILURIAN.

Silurian Lamellibranchs ; BIGOT.

Upper Silurian of Victoria, Australia : list of fossils ; ETHERIDGE.

Hyalithes acutus ; REMELÉ.

Cambrian and Silurian of Manitoba : 8 new fossils ; WHITEAVES.

CAMBRIAN.

Pteropods of W. Australia ; FOORD.

BRACHIOPODA.

BY

P. CHALMERS MITCHELL, B.A., F.Z.S.

- I.—INTRODUCTION, p. 1.
II.—LIST OF PAPERS, p. 1.
III.—REFERENCES ; SYSTEMATIC CLASSIFICATION : p. 4.
IV.—REFERENCES ; SUBJECT-MATTER CLASSIFICATION : p. 8.
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I.—INTRODUCTION.

MOST of the work is palæontological, and very many new species have been described.

MCCREERY writes on the causes leading to the extinction of species, and ROLFE has an interesting paper on the characters and distribution of Brachiopod genera.

DALL, FISCHER & OEHLERT, PFEFFER, and WHITELEGGE have written on living forms.

INARTICULATA : *Lingulodiscina*, new genus.

ARTICULATA : *Brunconia*, *Cyrtotheca*, *Dyscolia*, *Eucaluthis*, *Heimia*, new genera.

II.—LIST OF PAPERS.

BITTNER, A. (1) Brachiopoden der Alpenen Trias. Abh. der k. k. Geol. Reichsanstalt Wien, xiv, 325 pp., 41 pls.

Cyrtotheca, n. g.

— (2) Die Trias von Eberstein u. Pölling in Kärnten. JB. geol. Reichsanst. xxxix, pp. 482–488.

With several new species.

CALVIN, S. Some New Species of Palæozoic Fossils. Bull. Lab. Iowa, i, pp. 173–181, 3 pls.

DALL, W. H. Preliminary Report on the Collection of *Mollusca* and *Brachiopoda* obtained in 1887-88. VII. On Scientific Results of Explorations by the U. S. Fish Commission Steamer 'Albatross.' P. U. S. Nat. Mus. xii, pp. 219-362, pls. v-xiv.

Brachiopoda, pp. 231 & 232.

FELIX, J. Versteinerungen aus der Mexicanischen Jura und Kreide-Formation. Palæontogr. xxxvii, pp. 140-199.

Brachiopoda, p. 176, pl. xxvii.

FISCHER, P., & OEHLERT, D. P. (1) Sur la Répartition Stratigraphique des Brachiopodes de mer profonde recueillis durant les expéditions du Travailleur et du Talisman. C.R. cxi, pp. 247-249.

— & —. (2) Diagnoses de nouveaux Brachiopodes. J. de Conch. xxx, pp. 70-74,

Dyscolia, n. g.; type, *Terebratulina wyvillei*. *Eucalathis*, n. g.; type, *T. murrayi*. *E. ergastiga*, n. sp. *Mühlfeldtia echinata*, n. sp.

FOERSTE, A. F. Notes on Clinton Group Fossils, with Special Reference to Collections from Indiana, Tennessee, and Georgia. P. Bost. Soc. xxiv, pp. 253-353, pls. iv-xi.

With several new species.

FOORD, A. H. Notes on the Palæontology of Western Australia. Geol. Mag. 1890, pp. 145-155, pls. vi & vii.

Brachiopoda, pp. 145-154.

FOORD, A. H., & WOODWARD, II. Notes on the Fossils of Western Australia. Introductory by Dr. WOODWARD. Descriptions of Fossils from the Kimberley District, Western Australia. T. c. pp. 97-105, pls. iv & v.

Brachiopoda, p. 100.

GAGEL, C. Die Brachiopoden der cambrischen und silurischen Geschiebe in Diluvium der Provinzen Ost- und Westpreussen. 97 pp., 5 pls. Beiträge zur Naturk. Preussens. Herausgegeben von der Phys.-Oek. Ges. Königsberg: 1890.

Branconia, n. g., and many new species.

GLASS, REV. NORMAN. On a new Form of Spiral in *Spirifera glabra*. Geol. Mag. 1890, pp. 461-463, woodcut.

HAAS, H. J. Kritische Beiträge zur Kenntniss der jurassischen Brachiopoden-Fauna des Schweizerischen Juragebirges u. seiner angrenzenden Landestheile. I. Abh. Schw. pal. Ges. xvi, pp. 1-35, 2 pls. II. *Op. cit.* xvii, p. 36, 3 pls.

Many new species. *Heimia*, n. g.

LUCAS, A. H. S. On the Occurrence of *Kraussina lamarchiana*, Davidson, at Williamstown, with a Census of the Victorian *Brachiopoda*. P. R. Soc. Vict. ii, pp. 48 & 49.

MC CREERY, J. M. Note on some of the Causes of Extinction of Species.
Am. Geol. 1890, pp. 100-104.

Causes usually a large number of apparently unimportant bionomic conditions.

MEISSNER, M. Bericht ueber die Brachiopodenliteratur des Jahres 1887. Arch. f. Nat. 1888, ii, pp. 38-42.

OEHLERT, D. P. (1) Sur le Devonien des Environs d'Angers. Bull. Soc. géol. xvii, pp. 742-791, pls. xviii-xxi.

Several new species.

— (2) Note sur différents groupes établis dans le genre *Orthis* et en particulier sur *Rhipidomella*, Oehlert (= *Rhipidomys*, Oehlert, olim.). J. de Conch. xxx, pp. 367-374, woodcut.

PARONA, C. F. I Fossili del Lias inferiore di Saltrio in Lombardia. Atti Soc. Ital. xxxiii, pp. 69-103, pls. i-iii.

Brachiopoda, pp. 74 & 75, no plates.

PFEFFER, E. Die Fauna der Insel Jeretik, Port Wladimir an der Murman-Küste nach den Sammlungen des Herrn Kapitän Horn. JB. Hamb. vii, pp. 63-96.

Brachiopods, p. 83.

ROLFE, CHARLES W. Characters and Distribution of the Genera of *Brachiopoda*. Am. Nat. 1889, pp. 983-998.

The classification of the genera is "based mainly on external characteristics." Charts of the distribution are given.

WALTHER, J. Ueber eine Kohlen-Kalk-Fauna aus der aegyptisch-arabischen Wüste. Z. geol. Ges. xlii, pp. 419-449.

Brachiopoda, pp. 430-436.

WHITELEGGE, T. List of the Marine and Freshwater Invertebrate Fauna of Port Jackson and the Neighbourhood. J. R. Soc. N. S. W. xxiii, pp. 163-330.

Brachiopoda, pp. 293 & 294.

WHITFIELD, R. P. Description of a New Genus of Inarticulate Brachiopodous Shell. Bull. Am. Mus. Nat. Hist. iii, pp. 121 & 122, woodcuts.

Lingulodiscina, n. g.

WILSON, E. Fossil Types in the Bristol Museum. Geol. Mag. 1890, pp. 363-372 & 411-416.

Brachiopoda, pp. 412 & 414.

WINCHELL, N. H. Notice of the Discovery of *Lingula* and *Paradoxides* in the Red Quartzites of Minnesota. Bull. Minnesota Acad. iii, pp. 103-105.

III.—REFERENCES; SYSTEMATIC CLASSIFICATION.

Brachiopoda : characters and distribution : ROLFE.

Review of literature for 1887 ; MEISSNER.

Brachiopoda of deep sea ; FISCHER, P., & OEHLERT, D. P. (1).

Type fossils in Bristol Museum, pp. 412 & 414 ; WILSON.

Brachiopoda from Swiss Jurassic, with figs. ; HAAS.

Brachiopoda from Lias of Lombardy ; PARONA.

INARTICULATA.

CRANIIDÆ.

† *Crania davidsoni*, n. sp., p. 24, pl. i, figs. 13 & 14 ; GAGEL.

† *Pseudocrania pectinata*, n. sp., p. 25, pl. i, fig. 11 ; *P.* n. sp., pl. i, fig. 10 ;
id.

LINGULIDÆ.

† *Lingula elongata*, n. sp., p. 21, pl. i, fig. 4 ; GAGEL.

✓ † *Lingulodiscina*, n. g. ; WHITFIELD.

† *Lingula* in the Red Quartzites of Minnesota ; WINCHELL.

ARTICULATA.

ATRYPIDÆ.

† *Atrypa marginalis*, p. 314, pl. vi, figs. 8 & 9 ; FOERSTE.

† *Atrypa reticularis* from W. Australia, p. 100, woodcut ; FOORD.

KONINCKIDÆ.

† *Amphiclina*, n. sp., p. 486 ; BITTNER (2).

† *Amphiclina haberfelneri*, n. sp., p. 149, pl. xxx, fig. 33 ; † *A. lonyensis*, n. sp., p. 150, pl. xxx, fig. 35 ; † *A. squamula*, n. sp., p. 142, pl. xxx, fig. 37 ; † *A. intermedia*, n. sp., p. 271, pl. xxx, fig. 40 ; † *A. speciosa*, n. sp., p. 151, fig. 41 ; *id.* (1). † *A. amœna*, n. sp., p. 127, pl. xxx, fig. 13 ; † *A. cognata*, n. sp., p. 148, pl. xxx, fig. 17 ; † *A. coarctata*, n. sp., p. 149, pl. xxx, fig. 18 ; † *A. scitula*, n. sp., p. 119, pl. xxx, fig. 19 ; † *A. aptera*, n. sp., p. 122, pl. xxx, fig. 20 ; † *A. unguolina*, n. sp., p. 238, pl. xxx, fig. 21 ; † *A. sturti*, n. sp., p. 122, pl. xxx, fig. 22 ; † *A. intermedia*, n. sp., p. 271, pl. xxx, fig. 26 ; *id.* (1). † *A. laubei*, n. sp., p. 99, pl. iii, fig. 9 ; † *A. speciosa*, n. sp., p. 100, pl. iii, fig. 10 ; † *A. hernsteinensis*, n. sp., p. 237, pl. xvi, fig. 19 ; † *A. ambigua*, n. sp., p. 238, pl. xvi, fig. 20 ; *id.* (1).

† *Amphiclinodontu zugmayeri*, n. sp., p. 239, pl. xvi, fig. 21 ; † *A. magna*,

A dagger (†) indicates fossil species.

n. sp., p. 242, pl. xvi, fig. 23 ; †*A. amphitoma*, n. sp., p. 240, pl. xvi, fig. 24 ; †*A. crassula*, n. sp., p. 241, pl. xvi, fig. 26 ; †*A. carnica*, n. sp., p. 136, pl. xxx, fig. 24 ; †*A. rostrum*, n. sp., p. 132, pl. xxx, fig. 42 ; †*A. stachei*, n. sp., p. 135, pl. xxx, fig. 43 ; *id.* (1).

†*Koninckia oligocæla*, n. sp., p. 96, pl. iii, fig. 5 ; †*K. fastigata*, n. sp., p. 97, pl. iii, fig. 6 ; †*K. leopoldi*, n. sp., p. 232, pl. xvi, fig. 1 ; †*K. elegantula*, n. sp., p. 234, pl. xvi, fig. 5 ; †*K. blandula*, n. sp., p. 234, pl. xvi, fig. 13 ; †*K. planiuscula*, n. sp., p. 236, pl. xvi, fig. 15 ; †*K. strophomenoides*, n. sp., p. 235, pl. xvi, fig. 16 ; †*K. alata*, n. sp., p. 236, pl. xvi, fig. 17 ; *id.* (1).

†*Koninckella* (?) *sellaris*, n. sp., p. 269, pl. xxxix, fig. 21 ; *id.* (1).

†*Koninckina telleri*, n. sp., p. 131, pl. xxx, fig. 1 ; †*K. expansa*, n. sp., p. 132, pl. xxx, fig. 11 ; *id.* (1).

†*Kraussina lamareckiana* at Williamstown, Australia ; LUCAS.

PRODUCTIDÆ.

†*Chonetes*, p. 103, pl. v, fig. 6 ; FOORD.

†*Productus subquadratus*, p. 152, pl. vii, fig. 5 ; †*P. undatus*, p. 152, pl. vii, fig. 6 ; †*P. tenuistriatus*, p. 151, pl. vii, figs. 4 & 4a ; *id.* †*P. semireticulatus*, p. 433, pl. xxvi, figs. 8-11 ; WALTHER.

RHYNCHONELLIDÆ.

†*Branconia borussica*, n. g. & sp., p. 62, pl. iv, fig. 12 ; GAGEL.

†*Rhynchonella arcestiphila*, n. sp., p. 267, pl. xxiv, fig. 16 ; †*R. misella*, n. sp., p. 267, pl. xxiv, fig. 17 ; †*R. pusillula*, n. sp., p. 268, pl. xxiv, fig. 18 ; †*R. guttata*, n. sp., p. 268, pl. xxiv, fig. 18 ; †*R. uncinulina*, n. sp., p. 267, pl. xxiv, fig. 19 ; †*R. concordia*, n. sp., p. 264, pl. xxvii, figs. 1-17 ; BITTNER (1). †*R. bajuvarica*, n. sp., p. 162, pl. xli, fig. 1 ; †*R. carantana*, n. sp., p. 144, pl. xli, fig. 6 ; †*R. pupula*, n. sp., p. 105, pl. xli, fig. 7 ; †*R. rimulata*, n. sp., p. 228, pl. xli, fig. 8 ; †*R. deliciosa*, n. sp., p. 155, pl. xxxv, fig. 26 ; †*R. deliculata*, n. sp., p. 17, pl. xxxv, fig. 28 ; †*R. attilina*, n. sp., p. 16, pl. xxxvii, fig. 1 ; †*R. arpadica*, n. sp., p. 160, pl. xxxvii, fig. 17 ; †*R. salinaria*, n. sp., p. 169, pl. xxxvii, fig. 30 ; †*R. sublata*, n. sp., p. 104, pl. xxxviii, fig. 11 ; †*R. generosa*, n. sp., p. 227, pl. xxxix, fig. 10 ; †*R. pirum*, n. sp., p. 214, pl. xxxix, fig. 20 ; †*R. hecuba*, n. sp., p. 169, pl. xl, fig. 28 ; †*R. familiaris*, n. sp., p. 262, pl. xxvii, fig. 18 ; †*R. lilii*, n. sp., p. 262, pl. xxvii, fig. 23 ; †*R. fuggeri*, n. sp., p. 265, pl. xxvii, fig. 24 ; †*R. sprete*, n. sp., p. 266, pl. xxvii, fig. 27 ; †*R. torrenensis*, n. sp., p. 261, pl. xxviii, fig. 6 ; †*R. arcula*, n. sp., p. 40, pl. xxxi, fig. 1 ; †*R. retractifrons*, n. sp., p. 39, pl. xxxi, fig. 2 ; †*R. pichleri*, n. sp., p. 102, pl. iii, fig. 21 ; †*R. blaasi*, n. sp., p. 104, pl. iii, fig. 24 ; †*R. linguligera*, n. sp., p. 105, pl. iii, fig. 26 ; †*R. lingularis*, n. sp., p. 153, pl. iii, fig. 27 ; †*R. carinthiaca*, n. sp., p. 134, pl. iv, fig. 1 ; †*R. annexa*, n. sp., p. 213, pl. viii, fig. 20 ; †*R. angulifrons*, n. sp., p. 214, pl. viii, fig. 23 ; †*R. associata*, n. sp., p. 214, pl. viii, fig. 27 ; †*R.*

pirum, n. sp., p. 214, pl. ix; †*R. lingulina*, n. sp., p. 215, pl. x, fig. 1; †*R. projectifrons*, n. sp., p. 41, pl. xxxi, fig. 16; *R. productifrons*, n. sp., p. 41, pl. xxxi, fig. 18; †*R. protractifrons*, n. sp., p. 41, pl. xxxi, fig. 20; †*R. ottomana*, n. sp., p. 47, pl. xxxi, fig. 23; †*R. cimbrica*, n. sp., p. 48, pl. xxxi, fig. 24; †*R. volitans*, n. sp., p. 47, pl. xxxi, fig. 25; †*R. teutonica*, n. sp., p. 49, pl. xxxi, fig. 26; †*R. vedidaexcavata*, n. sp., p. 10, pl. xxxi, fig. 27; †*R. trinodosi*, n. sp., p. 13, pl. xxxii, figs. 17–35; *id.* (1). †*R. acinus*, n. var. *conveza*, p. 318, pl. vi, fig. 13; FÖRSTER. †*R. pugnus*, p. 101, pl. v, figs. 2 & 2a; FOORD. †*R. haloppila*, n. sp., p. 218, pl. xi, fig. 1; †*R. halorica*, n. sp., p. 220, pl. xi, fig. 17; †*R. synophrys*, n. sp., p. 221, pl. xi, fig. 24; †*R. mimula*, n. sp., p. 220, pl. xii, fig. 1; †*R. sublevata*, n. sp., p. 221, pl. xii, fig. 4; †*R. schönni*, n. sp., p. 221, pl. xii, fig. 9; †*R. intercurrents*, n. sp., p. 222, pl. xii, fig. 11; †*R. juvavica*, n. sp., p. 222, pl. xii, fig. 14; †*R. associata*, n. sp., p. 223, pl. xii, fig. 31; †*R. notabilis*, n. sp., p. 225, pl. xiii, fig. 1; BITTNER (1). †*R. kittlii*, n. sp., p. 226, pl. xiii, fig. 5; †*R. mojsisovicsi*, n. sp., p. 226, pl. xiii, fig. 8; †*R. intermixta*, n. sp., p. 225, pl. xiii, fig. 10; †*R. geyeri*, n. sp., p. 229, pl. xiii, fig. 11; †*R. æmulatrix*, n. sp., p. 229, pl. xiii, fig. 18; †*R. imitatrix*, n. sp., p. 230, pl. xiii, fig. 21; †*R. regilla*, n. sp., p. 226, pl. xiii, fig. 23; †*R. superba*, n. sp., p. 228, pl. xiv, fig. 1; *id.* (1). †*R. cuneiformis*, n. sp., p. 58, pl. v, fig. 14; †*R. baltica*, n. sp., p. 59, pl. v, fig. 13; †*R. kiesoniana*, n. sp., p. 59, pl. v, fig. 12; †*R. vanhoeffeni*, n. sp., p. 59, pl. v, fig. 15; *R.*, n. sp., p. 59, pl. iv, fig. 15; GAGEL. †*R. douvillæi*, n. sp., p. 6, pl. i, figs. 1 & 2; †*R. rothpletzi*, n. sp., p. 11, pl. ii, fig. 13; †*R. bertschingeri*, n. sp., p. 13, pl. ii, figs. 14–19; †*R. petitclerci*, n. sp., p. 85, pl. x, fig. 15; HAAS. †*R. pleurodon*, p. 433, pl. xxiv, figs. 9a–d; WALTHER.

†*Rhynchonellina juvavica*, n. sp., p. 192, pl. xxv; BITTNER (1).

SPIRIFERIDÆ.

†*Athyris macleayana*, p. 149, pl. vii, fig. 3, and woodcut; FOORD.

†*Cyrtina fritschii*, n. sp., p. 79, pl. xli, fig. 20; BITTNER (1).

†*Retzia ladina*, n. sp., p. 92, pl. iii, fig. 1; †*R. münsteri*, n. sp., p. 91, pl. iii, fig. 4; †*R. pretiosa*, n. sp., p. 246, pl. xv, fig. 1; *id.* (1). †*R. brancorinas*, n. sp., p. 66, pl. i, fig. 27; GAGEL. †*R. modesta*, n. sp., p. 274, pl. xxix, fig. 15; †*R. latiuscula*, n. sp., p. 275, pl. xxix, fig. 16; †*R. speciosa*, n. sp., p. 43, pl. xxxii, fig. 14; †*R. schwageri*, n. sp., p. 21, pl. xxxvi, fig. 1; †*R. benecki*, n. sp., p. 21, pl. xxxvi, fig. 5; †*R. lorelzii*, n. sp., p. 120, pl. xxxviii, fig. 23; BITTNER (1).

†*Spirifer*: various species, with figs., pp. 778–780; OEHLERT (1).

†*Spirifer bazini*, n. sp., p. 781, pl. xx, fig. 3; *id.* (1).

†*Spirifer*, var. species, p. 436, pl. xxv; WALTHER.

†*Spirifera radiata*, p. 313, pl. v, fig. 6; *S. (Cyrtia) rostellum*, p. 313, pl. v, fig. 5; FÖRSTER. †*Spirifera* from Devonian of W. Australia, p. 100, pl. v, fig. 1; †*S. hardmani*, n. sp., p. 146, pl. vii, figs. 1 & 1a.; †*S. kimberleyensis*, n. sp., p. 105, pl. v, fig. 11; †*S. lata*, p. 145, pl. vi; †*S.*

musakheylensis, p. 147, pl. vii, fig. 2, pl. v, fig. 12; FOORD. †*S. glabra*: new form of spiral; GLASS.

†*Spiriferina bæckhii*, n. sp., p. 285, pl. xxvi, fig. 8; †*S. dernoensis*, n. sp., p. 284, pl. xxvi, fig. 12; †*S. lipoldi*, n. sp., p. 139, pl. xxviii, fig. 20; †*S. ptychitiphila*, n. sp., p. 44, pl. xxxiii, fig. 17; †*S. avarica*, n. sp., p. 35, pl. xxxv, fig. 6; †*S. manca*, n. sp., p. 30, pl. xxxv, fig. 12; †*S. pia*, n. sp., p. 34, pl. xxxv, fig. 22; †*S. pectinata*, n. sp., p. 31, pl. xxxv, fig. 24; †*S. fuchii*, n. sp., p. 120, pl. xxxviii, fig. 20; †*S. feneckii*, n. sp., p. 55, pl. xxxviii, fig. 24; †*S. fraasi*, n. sp., p. 165, pl. xl, fig. 34; †*S. ampla*, n. sp., p. 165, pl. xli, fig. 10; †*S. fortis*, n. sp., p. 119, pl. xli, fig. 19; †*S. klipsteini*, n. sp., p. 73, pl. ii, fig. 1; †*S. frondescens*, n. sp., p. 74, pl. ii, fig. 2; †*S. badiotica*, n. sp., p. 75, pl. ii, fig. 3; †*S. tyrolensis*, n. sp., p. 75, pl. ii, fig. 5; †*S. venustula*, n. sp., p. 74, pl. ii, fig. 4; †*S. evanescens*, n. sp., p. 133, pl. iv, fig. 4; †*S. halobiarum*, n. sp., p. 248, pl. xiv, fig. 10; *id.* (1). †*S. lipoldi*, n. sp., p. 486; *id.* (2).

†*Spirigera ambigua*, pl. xxiv, figs. 1, 2, 4, & 5; *id.*

†*Spirigera hofmanni*, n. sp., p. 487; BITTNER (2).

†*Spirigera leptorhyncha*, n. sp., p. 272, pl. xxix, fig. 1; †*S. eurycolpos*, n. sp., p. 273, pl. xxix, fig. 7; †*S. hofmanni*, n. sp., p. 272, pl. xxix, fig. 23; †*S. cislensis*, n. sp., p. 255, pl. xxix, fig. 32; †*S. dolomitica*, n. sp., p. 255, pl. xxix, fig. 34; †*S. marmorea*, n. sp., p. 42, pl. xxxiii, fig. 1; †*S. venetiana*, n. sp., p. 49, pl. xxxiii, fig. 22; †*S. balatonica*, n. sp., p. 159, pl. xxxvii, fig. 25; †*S. hexagonalis*, n. sp., p. 156, pl. xxxvii, fig. 27; †*S. trisulcata*, n. sp., p. 141, pl. xxxvii, fig. 29; *S. packyrhyncha*, n. sp., p. 245, pl. xv, fig. 6; *S. ausseuna*, n. sp., p. 71, pl. xv, fig. 8; *id.* (1).

STROPHOMENIDÆ.

†*Orthis biforata*: causes of extinction; MCCREERY.

†*Orthis calligramma*, p. 308, pl. vi, figs. 4 & 5; FOERSTE.

†*Leptaena interstriates*, p. 776, pl. xix, fig. 10; *L. sedgwicki*, p. 776, pl. xix, fig. 8, pl. xx, fig. 1; OEHLERT (1).

†*Leptaena transversalis*: Dalman varieties, p. 293; FOERSTE.

†*Streptorhynchus crenistria*, p. 435, pl. xxv, figs. 1a, b, 2, & 5; WALTHER.

†*Strophomena obscura*, p. 306, pl. vi, figs. 15 & 16; FOERSTE.

†*Strophomena patenta*, p. 300, pl. v, fig. 22; †*S. hanoverensis*, n. sp., p. 301, pl. vi, fig. 1; †*S. corrugata*, var. *pluri-striata*, n. var., p. 303, pl. vi, figs. 26 & 27; *id.*

†*Strophonema aequistriata*, n. sp., p. 42, pl. iii, fig. 17; †*S. schmidtii*, n. sp., p. 47, pl. iii, fig. 4; †*S. lindströmi*, n. sp., p. 43, pl. iii, fig. 12; †*S. pompecki*, n. sp., p. 43, pl. v, fig. 24; †*S. jentzechi*, n. sp., p. 44, pl. v, fig. 26; †*S. pseudoglypha*, n. sp., p. 45, pl. iii, fig. 16; GAGEL.

†*Strophonema sculpta*, n. sp., p. 46, pl. iii, fig. 21; †*S. extensa*, n. sp., p. 47, pl. iii, fig. 15; *id.*

TEREBRATULIDÆ.

†*Dictyothyris*, n. sp.?, p. 26, pl. ii, figs. 1 & 2; †*D. rollieri*, n. sp., p. 28, pl. ii, figs. 2-5; HAAS.

† *Dielasnia hastatum*, p. 432, pl. xxiv, figs. 7, 8, & 10; WALTHER.
 † *Dyscolia*, n. g.; type, *Terebratulina wyvillei*; FISCHER & OEHLERT (2).
 † *Eucalathis*, n. g.; type, *Terebratulina murrayi*; *E. ergastiga*, n. sp.;
iid. (2).

Mühlefeldtia echinata, n. sp.; *iid.* (2).

† *Pentamerus zingeri*, n. sp., p. 55, pl. iv, fig. 6; GAGEL.

† *Terebratula dorenbergi*, n. sp., p. 176, pl. xxvii, figs. 8 & 8a, b;
 FELIX. † *T. farciliensis*, n. sp., p. 95, pl. x, figs. 1-4; HAAS. † *T. hungarica*, n. sp., p. 278, pl. xxvi, figs. 2 & 3; † *T. prepuncta*, n. sp., p. 257, pl. xxviii, fig. 2; † *T. laricimontana*, n. sp., p. 39, pl. xxxiii, fig. 21; † *T. aulacothyroidea*, n. sp., p. 62, pl. xxxviii, fig. 10; † *T. veszprimica*, n. sp., p. 158, pl. xxxix, fig. 18; † *T. neglecta*, n. sp., p. 60, pl. i, fig. 3; † *T. ladina*, n. sp., p. 61, pl. i, fig. 4; † *T. debilis*, n. sp., p. 61, pl. i, fig. 5; † *T. tenella*, n. sp., p. 61, pl. i, fig. 6; † *T. capsella*, n. sp., p. 64, pl. i, fig. 12; BITTNER (1).

† *Terebratula (Cryptonella) iowensis*, n. sp., p. 174, pl. iii, figs. v a & b;
 CALVIN.

Terebratula julica, n. sp., p. 125, pl. iv, fig. 14; BITTNER (1).

† *Waldheimia, aff. Damesi*, n. sp., p. 487; *id.* (2). † *W. patricia*, n. sp., p. 258, pl. xxvi, fig. 20; † *W. reflexa*, n. sp., p. 258, pl. xxvi, fig. 21; † *W. porrecta*, n. sp., p. 64, pl. i, fig. 11; † *W. major*, n. sp., p. 137, pl. iv, fig. 12; † *W. eudoxa*, n. sp., p. 127, pl. iv, fig. 18; † *W. dualis*, n. sp., p. 199, pl. v, fig. 8; † *W. reascendens*, n. sp., p. 199, pl. v, fig. 14; † *W. pulchella*, n. sp., p. 200, pl. v, fig. 15; † *W. commendat*, p. 200, pl. v, fig. 17; † *W. dualina*, n. sp., p. 200, pl. v, fig. 18; † *W. sandlingensis*, n. sp., p. 201, pl. v, fig. 21; *id.* (1).

† *Zeibleria sorlinensis*, n. sp., p. 32, pl. ii, figs. 22 & 23; HAAS.

THECIDIIDÆ.

† *Thecidium asperulatum*, n. sp., p. 68, pl. i, fig. 18; † *T. gryphæatum*, n. sp., p. 68, pl. i, fig. 17; † *T. piestingense*, n. sp., p. 232, pl. xv, fig. 26; † *T. stürgenbaumi*, n. sp., p. 280, pl. xxvi, fig. 16; † *T. cymbula*, n. sp., p. 55, pl. xxxviii, fig. 34; † *T. zalaense*, n. sp., p. 157, pl. xxxviii, p. 35; BITTNER (1).

† *Thecospira tenuistriata*, n. sp., p. 143, pl. xxxviii, fig. 27; † *T. zugmayeri*, n. sp., p. 68, pl. i, fig. 16; *id.* (1).

IV.—REFERENCES; SUBJECT-MATTER

CLASSIFICATION.

GENERAL ANATOMY.

Spirifera glabra: new form of spiral; GLASS.

GEOGRAPHICAL DISTRIBUTION.

Brachiopoda : ROLFE.

Brachiopods of deep sea ; FISCHER & OEHLERT.

Murman Coast, Port Wladimir ; PFEFFER.

Australia, Victoria ; LUCAS.

N. S. Wales : *Brachiopoda* of Port Jackson ; WHITELEGGE.

GEOLOGICAL DISTRIBUTION.

Jurassic of Switzerland ; HAAS.

Lias *Brachiopoda* from Lombardy ; PARONA.

Carboniferous Limestone of Arabia ; WALTHER.

Devonian of Angers ; OEHLERT (1).

Cambrian and Silurian ; GAGEL.

POLYZOA.

BY

P. CHALMERS MITCHELL, B.A., F.Z.S.

- I.—INTRODUCTION, p. 1.
 - II.—LIST OF PAPERS, p. 1.
 - III.—REFERENCES ; SYSTEMATIC CLASSIFICATION, p. 4. .
 - IV.—REFERENCES ; SUBJECT-MATTER CLASSIFICATION, p. 9.
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I.—INTRODUCTION.

AMONG the most important papers recorded this year, is BRÆM's monograph on the anatomy and development of freshwater *Bryozoa*. The Rev. T. HINCKS has valuable notes on the classification of *Polyzoa*. LANG has a very interesting account of the anatomy and affinities of *Cephalodiscus*. CORI writes on the anatomy and development of the nephridia in *Polyzoa*, and DAVENPORT and PROUHO have important embryological papers. In systematic work a great deal has been done. In all, 111 new living species and 25 new fossil species have been described.

ENTOPROCTA : 1 new *Rhabdopleura*.

ECTOPROCTA : CYCLOSTOMATA : *Hypocyttis*, new genus.

CTENOSTOMATA : *Vinella*, new fossil genus.

CHEILOSTOMATA : *Tremopora* and *Cyclostomella*, new living genera, and *Diastoporina*, new fossil genus.

VERMIFORMIA : 1 new *Phoronis*.

II.—LIST OF PAPERS.

ANDREWS, E. A. On a new American Species of the remarkable Animal *Phoronis*. Ann. N. H. v, pp. 445-449, woodcut.

Phoronis architecta, n. sp.

BOURNE, G. C. Report of a Trawling Cruise in H.M.S. 'Research' off the S.W. Coast of Ireland. J. Mar. Biol. Ass. (n.s.) i, pp. 306-323.

Polyzoa, p. 318.

BRÆM, F. Untersuchungen über die Bryozoen des süßen Wassers. Bibl. Zool. Heft. 6, i & ii, 1890, 15 pls.

On the anatomy and development of the *Bryozoa* of fresh water, with descriptions of the German forms.

CORI, C. I. Ueber Nierenanälchen bei Bryozoen. Lotos, xi, pp. 1-18, 1 pl.

The *Ectoprocta* and the *Phylactolemata* have a metanephros, while the *Entoprocta* have a protonephros.

CUÉNOT, M. L. Formation des Produits Génitaux par les Glandes Lymphatiques (invertébrés). C.R. Ass. Fr. Sci. 1889, ii, pp. 581-586. *Bryozou*, p. 583.

2 DAVENPORT, C. B. *Cristatella*: the Origin and Development of the Individual in the Colony. Bull. Mus. C. Z. xx, pp. 1-151, 11 pls., many woodcuts.

An elaborate account of the development.

FOERSTE, A. F. Notes on Clinton Group Fossils, with Special Reference to Collections from Indiana, Tennessee, and Georgia. P. Bost. Soc. xxiv, pp. 253-353, pls. iv-xi.

With several new species.

GIOLI, G. Briozoi neogenici dell' isola di Pianosa nel Mar Tirreno. Mem. Soc. Tosc. x, pp. 251-266, pl. xiv.

On Tertiary *Bryozoa*.

HARMER, S. F. (1) On the Regeneration of Lost Parts in *Polyzoa*. Rep. Brit. Ass. 1890, pp. 862 & 863.

— (2) On the Origin of the Embryos in the Ovicells of the Cyclostomatous *Polyzoa*. P. Cambr. Phil. Soc. vii, p. 48.

HINDE, G. J. Notes on the Palæontology of Western Australia. Corals and *Polyzoa*. Geol. Mag. vii, 1890, pp. 194-204, pls. viii & viiia.

Polyzoa, pp. 199-204. Several new species.

HINCKS, REV. T. Critical Notes on the *Polyzoa*. Part II. Classification. Ann. N. H. v, pp. 83-103.

JULLIEN, J. Description d'un Bryozoaire nouveau du Genre *Rhabdopleura*. Bull. Soc. Z. Fr. xv, pp. 180-183, woodcut.

Rhabdopleura grimaldii, n. sp.

KHVOROSTANSKIÏ, I. K. *Bryozou* Murmanskaiio proberezh'ya. Trudui St. Petersburg Est. xxi, i, pp. 7-16.

Bryozoa of the Murman coast.

- KIRKPATRICK, R. Report on the *Hydrozoa* and *Polyzoa* collected by P. W. Bassett-Smith, Esq., Surgeon R.N., during the Survey of the Tizard and Macclesfield Banks, in the China Sea, by H.M.S. 'Rambler,' Commander W. U. Moore. Ann. N. H. v, pp. 11-24, pls. iii-v. *Polyzoa*, pp. 16-24, with several new species.
- LANG, A. Zum Verständniss der Organisation von *Cephalodiscus dodecephalus*, M'Int. Jen. Z. Nat. xxv, pp. 1-12.
Gives an account of the anatomy of *Cephalodiscus*, based on Harmer, and then discusses its relations. He accepts Harmer's conclusion that it is an ally of *Balanoglossus*, and suggests that it is a near relation of *Balanoglossus*, modified by sedentary and tubicolous life.
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Bryozoa, pp. 141-146.
- MACGILLIVRAY, P. H. (1) On some South Australian *Polyzoa*. Tr. R. Soc. S. Austr. xii, pp. 24-30, pl. ii.
— (2) An additional List of South Australian *Polyzoa*. Op. cit. xiii, pp. 1-7, pl. i.
— (3) Description of New or Little-known *Polyzoa*. P. R. Soc. Vict. ii, pp. 106-110, pls. iv & v.
- MICHAELSEN, W. Jahresbericht ueber die Bryozoën für 1886 u. 1887. Arch. f. Nat. 1888, ii, pp. 10-37.
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— (2) Sul Valore Sistematico di alcune specie di Briozoi. T. c. pp. 69-76.
- ORTMANN, A. Die Japanische Bryozoen-fauna. Bericht ueber die von Herrn Dr. L. Döderlein in Jahre 1880-81, gemachten Sammlungen. Arch. f. Nat. liv, Bd. 1, pp. 1-74, pls. i-iv.
Tremopora, n. g., *Cyclostomella*, n. g., *Hypocytis*, n. g.; and many new species.
- OSSWALD, VON. Die *Bryozoa* der Mecklenbürgischen Kreidegeschiebe. Arch. Ver. Mecklenb. xliii, pp. 101-110.
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Chief points are :—Presence of two chitinous valves covering the aboral region. Mesoderm divided into muscles and cellular bands. Nervous system and aboral sensory organ. Fixation, and then a process of histolysis takes place.

RIDLEY, H. N. Notes on the Zoology of Fernando Noronha. J. L. S. xx, pp. 473-503. *Polyzoa*, by KIRKPATRICK, R., pp. 504-506, woodcuts.

2 new species.

SEELIGER, O. Bemerkungen zur Knospenentwicklung der Bryozoen. Z. wiss. Zool. 1, pp. 561-599, 2 pls., woodcut.

ULRICH, E. O. New Lower Silurian *Bryozoa*. J. Cincinn. Soc. xii, pp. 173-198, woodcuts.

Vinella, n. g., allied to *Mimosella*; *Diastoporina*, n. g.

VINE, G. R. A Monograph of the *Polyzoa* (*Bryozoa*) of the Red Chalk of Hunstanton. Q. J. Geol. Soc. xlvi, pp. 454-486, pl. xix.

With several new species.

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ZYKOFF, W. Zur Fauna der Süßwasser Bryozoen der Umgegend von Moskau. Zool. Anz. xiii, p. 444.

III.—REFERENCES ; SYSTEMATIC CLASSIFICATION.

Polyzoa : review of literature for 1886-87 ; MICHAELSEN.

Polyzoa : LANKESTER.

Polyzoa : classification ; HINCKS.

Systematic value of Bryozoan species ; NAMIAS (2).

Polyzoa from China Sea ; KIRKPATRICK : from Japan ; ORTMANN : from Fernando Noronha ; KIRKPATRICK, *vide* RIDLEY.

Polyzoa : regeneration of lost parts ; HARMER (1).

Polyzoa : nephridia ; CORI : anatomy and development ; BRÆM.

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I. PHYLACTOLÆMATA.

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II. GYMNOLOÆMATA.

CYCLOSTOMATA.

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†*Phylloporina subluxa*, n. sp., p. 179, with fig. ; †*P. halli*, n. sp., p. 181, with fig ; ULRICH.

†*Polypora australis*, n. sp., p. 199, pl. viia, figs. 3 & 3a ; HINDE.

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†*Hypocyttis*, n. g. ; *H. asteriscus*, n. sp., p. 66, pl. ii, fig. 19 ; *id.*

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Hornera cervicornis, n. sp., p. 60, pl. iv, fig. 27 ; *id.*

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†*Defrancia cespitosa*, n. sp., p. 252, pl. xiv, figs. 1a, b, & c ; GIOLI.

Lichenopora capillata, n. sp., p. 22, pl. iv, figs. 4 & 4a ; KIRKPATRICK. *L. conica*, n. sp., p. 64, pl. iv, fig. 24 ; *L. imperialis*, n. sp., p. 64, pl. iv, fig. 35 ; ORTMANN.

PTILODICTYONIDÆ.

†*Ptilodictya farctus*, n. sp., p. 328, pl. vi, fig. 31 ; †*P. famelicus*, n. sp., p. 329, pl. vi, fig. 32 ; †*P. rudis*, n. sp., p. 329, pl. vi, fig. 33 ; FOERSTE.

RHABDOMESODONTIDÆ.

†*Rhombopora tenuis*, n. sp., p. 203, pl. viiia, figs. 4 & 4a ; HINDE.

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†*Stictoporella rigida*, n. sp., p. 188, with fig. ; ULRICH.

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†*Proboscina angustata*, p. 467, pl. xix, figs. 1a-d ; †*P. irregularis*, n. sp., p. 468, pl. xix, figs. 2a & b ; †*P. uberrima*, n. sp., pl. xix, figs. 3a & b ; †*P. gracilis*, Reuss., n. var. *reussii*, p. 469, pl. xix, figs. 4a & b ; †*P. hunstantonensis*, n. sp., p. 470, pl. xix, figs. 5a & b ; †*P. jessoni*, n. sp., p. 471, pl. xix, figs. 7a & b ; †*P. gigantopora*, p. 471, pl. xix, figs. 8a & b ; VINE.

†*Stomatopora tenuissima*, n. sp., p. 175, with fig. ; †*S. turgida*, n. sp., p. 176 ; ULRICH.

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†*Vinella*, n. g., allied to *Mimosella* ; †*V. repens*, n. sp., with fig. ; ULRICH.

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Menipea porteri, n. sp., p. 25 ; MACGILLIVRAY (1). *M. integra*, n. sp., p. 21, pl. i, fig. 1 ; *M. compacta*, pl. i, fig. 2 ; *M. compacta*, n. var. *dilatata* ; ORTMANN.

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† *Lepralia incrassata*, n. sp., p. 260, pl. xiv, fig. 6 ; GIOLI. *L. onucha*, n. sp., p. 20, pl. v, figs. 5 & 5a ; KIRKPATRICK. *L. foliacea*, p. 39 ; *L. magnicella*, n. sp., p. 39, pl. iii, fig. 8 ; *L. megalocarpa*, n. sp., p. 40, pl. iii, fig. 9 ; *L. bidentata*, n. sp., p. 40, pl. iii, fig. 10 ; *L. symmetrica*, n. sp., p. 40, pl. iii, fig. 11 ; *L. acuta*, n. sp., p. 41, pl. iii, fig. 12 ; *L. obtusata*, n. sp., p. 41, pl. iii, fig. 13 ; ORTMANN.

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Phylactella geometrica, n. sp., p. 20, pl. v, figs. 7-7c ; KIRKPATRICK.

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† *Membranipora gaultina*, n. sp., p. 484, pl. xix, figs. 13a & 13b; VINE. *M. hastilis*, n. sp., p. 18, pl. v, fig. 3; KIRKPATRICK. *M. pankoplites*, n. sp., p. 28, pl. ii, fig. 14; ORTMANN. *M. praelonga*, n. sp., p. 3, pl. i, fig. 1; MACGILLIVRAY (2).

‡ *Tremopora*, n. g., allied to *Amphiblestrum*; *T. dendracanthum*, n. sp., p. 29, pl. ii, fig. 6; ORTMANN.

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† *Diastoporina*, n. g.; † *D. flabellata*, n. sp.; ULRICH.

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VERMIFORMIA.

Phoronis architecta, n. sp., with woodcuts ; ANDREWS.
Phoronis : anatomy and histology ; CORI.

IV.—REFERENCES ; SUBJECT-MATTER CLASSIFICATION.

GENERAL ANATOMY.

Polyzoa ; LANKESTER.
 Freshwater *Bryozoa*, with many plates ; BRÆM.
Phoronis architecta, n. sp., with woodcuts ; ANDREWS.
Phoronis ; CORI.
Cephalodiscus ; LANG.

EXCRETORY ORGANS.

Nephridia of *Polyzoa* ; CORI.

GENITALIA.

CUÉNOT.

EMBRYOLOGY.

Polyzoa of fresh water ; BRÆM.
 Development of *Cristatella* ; DAVENPORT.
Crisia : origin of embryos ; HARMER (2).
 Larva of *Flustrella hispida* ; PROUHO.
 Budding in *Polyzoa* and *Loxosoma* ; SEELIGER.

BIONOMICS.

Cephalodiscus an ally of *Balanoglossus* modified by sedentary life ;
LANG.

Regeneration of lost parts in *Polyzoa* ; HARMER (1).

GEOGRAPHICAL DISTRIBUTION.

Fauna of mountain lakes ; ZSCHOKKE.

S.W. of Ireland : *Polyzoa* ; BOURNE.

Mediterranean : *Polyzoa* ; PERGENS.

Japan : *Polyzoa* ; ORTMANN.

China Sea, Tizard and Macclesfield Banks : *Polyzoa* ; KIRKPATRICK.

Australia : New *Polyzoa* ; MACGILLIVRAY (3).

S. Australia : *Polyzoa* ; *id.* (1 & 2).

N. S. Wales, Port Jackson : *Polyzoa* ; WHITELEGGE.

Murman Coast : *Polyzoa* ; KHVOROSTANSKIÏ.

Fernando Noronha : *Polyzoa* ; KIRKPATRICK, *vide* RIDLEY.

Moscow : Freshwater *Polyzoa* ; ZYKOFF.

GEOLOGICAL DISTRIBUTION.

Tertiary : *Polyzoa* from Italy ; GIOLI.

Upper Oligocene : *Polyzoa* from Doberges ; LIENENKLAUS.

Pliocene : *Polyzoa* from Modena ; NAMIAS (1).

Cretaceous : *Polyzoa* of Red Chalk of Hunstanton ; VINE

Cretaceous : *Polyzoa* from Mecklenburg ; OSSWALD.

Lias : *Polyzoa* from Lombardy ; PARONA.

Silurian : *Polyzoa* ; ULRICH.

CRUSTACEA.

BY

CECIL WARBURTON, B.A.

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II.—SYSTEMATIC.*

The general classification of article *Crustacea* in the Encyclopædia Britannica has been followed.

Subclass 1. THORACIPODA = MALACOSTRACA.

Legion 1. *PODOPHTHALMIA*.

Order 1. DECAPODA.

Sub-order (a.) *BRACHYURA*.

Actea tessellata, n. sp., POCCOCK, (1) p. 74.

Hyastenus tenuicornis, n. sp., *id.* p. 76.

Naxia touris, n. sp., *id.* p. 77.

† *Cæoloma holsaticum*, n. sp., STOLLEY, p. 165, pls. v & vi.

Pilumnus tahitensis, n. sp., DE MAN, p. 61, pl. iii.

Sesarma bataviana and *S. barbimana*, n. spp., *id.* pp. 101-107, pl. vi.

Sub-order (b.) *MACRURA*.

Hippolyte antarctica, n. sp., PFEFFER, (3) p. 51. *H. stewarti*, n. sp., G. THOMSON, (1) p. 259, pl. xiii. *H. ponapensis*, n. sp., ORTMANN, p. 502.

Latreutes laminirostris, *L. acicularis*, n. spp., *id.* p. 506.

‡ *Hetairocaris*, n. g., *orientalis*, n. sp., DE MAN, p. 120, pl. vi.

Peneus crucifer, n. sp., ORTMANN, p. 451, pl. xxxvi.

* Fossil forms are indicated by a dagger (†).

ORTMANN establishes three new families, *Rhynchocinetidae*, *Gnathophyllidae*, and *Hymenoceridae*, p. 459.

✓*Hemicaridina*, n. g., to receive *Caridina desmarestii*, Millet; ORTMANN, p. 464.

Coralliocaris inæqualis, n. sp., *id.* p. 510.

Anchistia spinigera, n. sp., *id.* p. 511.

Acanthephyra pulchra, n. sp., M. EDWARDS, p. 163.

Leander longipes, *L. braziliensis*, n. spp., ORTMANN, p. 519.

Gnathophyllum pallidum, n. sp., *id.* p. 537.

Crangon antarcticus, n. sp., PFEFFER, (3) p. 45.

Callianassa truncata, n. sp., GIARD & BONNIER (1).

Cambarus evermani, *C. hylas*, n. spp., FAXON, pp. 620 & 632.

Palinurus inermis, n. sp., POCOCK, (4) p. 516.

Atya sculptata, *A. gustavi*, n. spp., ORTMANN, p. 465.

• *Alpheus ridleyi*, *A. rostratipes*, n. spp., POCOCK, (4) p. 520.

Alpheus haanii, new name for *A. minor*, de Haan, preoccupied; ORTMANN, p. 472.

Alpheus macrodactylus, *A. dolichodactylus*, *A. acanthomerus*, n. spp., *id.* p. 473.

• *Brachycarpus neapolitanus*, n. sp., CANO (2), p. 38, pl. iv.

Stenopusculus spinosus, n. sp., POCOCK, (4) p. 523.

See also BOUVIER (12).

Order 2. STOMAPODA.

✓*Pterygosquilla*, n. g., *laticauda*, n. sp., HILGENDORF.

Legion 2. EDRIOPHTHALMIA.

Order 3. ISOPODA.

Armadillo trifolium, n. sp., DOLLFUS, (1) p. 1.

Philoscia anomala, n. sp., *id.* p. 4.

Trichoniscus (?) *murrayi*, *T. australis*, n. spp., *id.* p. 5.

Serolis pagenstecherii, *S. polita*, n. spp., PFEFFER, (3) pp. 73 & 81.

✓*Chelonidiidae*, n. fam. ✓*Chelonidium*, n. g., with n. sp. *C. punctatissimum*; *id.* p. 86.

Limnoria antarctica, n. sp., *id.* p. 96.

✓*Eugerdia globiceps*, n. g. & sp., MEINERT, p. 194, pl. ii.

✓*Vana longiremis*, n. g. & sp., *id.* p. 195, pl. ii.

✓*Cymodocella*, n. g., *tubicauda*, n. sp., PFEFFER, (3) p. 110.

✓*Notasellus*, n. g., *sarsii*, n. sp., *id.* p. 125.

Jaera antarctica, n. sp., *id.* p. 134.

✓*Haliacris*, n. g., *antarctica*, n. sp., *id.* p. 137.

Ossidina neo-zealandica, n. sp., G. THOMSON, p. 264, pl. xiv.

Cirolana neglecta, *C. gracilis*, *C. eximia*, *C. sulcata*, *C. californica*, *C. parva*, *C. minuta*, *C. japonica*, *C. sphaeromiformis*, n. spp., HANSEN, pp. 321-360, pls. i-iv.

Eurydice elegantula, *E. inermis*, *E. spinigera*, *E. orientalis*, n. spp., HANSEN, pp. 364-369, pls. v & vi.

Corallana tricornis, *C. quadricornis*, *C. subtilis*, *C. antillensis*, *C. fissicauda*, *C. oculata*, *C. warmingii*, *id.* pp. 376-390, pl. vii.

✓ *Alcirona*, n. g., with n. spp. *A. krebsii* and *A. insularis*; *id.* p. 391.

✓ *Lanocira*, n. g., with n. sp. *L. kroyeri*; *id.* p. 395.

Trachæa incerta, n. sp., *id.* p. 390, pls. viii & ix.

✓ *Microniscus*, n. g., *monocellatus*, n. sp.; DOLLFUS, (1) p. 7. [Changed to *Oligoniscus*; *id.* (2).]

Order 4. AMPHIPODA.

General.

Hansen's *Prinassus nordenskiöldii* is probably Norman's *Helleria coalita*, which Chevreux has renamed *Guernea*; STEBBING.

Eriopis, identified with *Niphargus* by Böeck, was reinstated by Wrzesniowski. The generic name *Eriopis* was, however, preoccupied, so *Eriopisa* is suggested. *Id.*

The genus *Orthopalame* is cancelled, Høeck having found that his *O. terschellingii* = Norman's *Microprotopus maculatus*. *Id.*

Dryope, Sp. Bate, = *Unciola*, Say; *id.*

Allorchestes georgianus, n. sp., PFEFFER, (3) p. 77, pl. i.

Metopa sarsii, n. sp., *id.* p. 84, pls. ii & iii.

Anonyx zschauui, *A. femoratus*, n. spp., *id.* p. 87, pl. ii.

✓ *Bovallia*, n. g., *gigantea*, n. sp., *id.* p. 95, pl. i.

✓ *Eurymera*, n. g., *monticulosa*, n. sp., *id.* p. 103, pl. i.

✓ *Stebbingia*, n. g., *gregaria*, n. sp., *id.* p. 110, pl. ii.

Calliopius georgianus, n. sp., *id.* p. 116, pl. ii.

Megamæra miersii, n. sp., *id.* p. 121, pl. iii.

Leucothoe antarctica, n. sp., *id.* p. 128, pl. ii.

Podocerus ingens, n. sp.; *id.* p. 131, pl. iii.

Caprellina mayeri, n. sp., *id.* p. 137, pl. iii.

✓ *Simorhynchotus stebbingi*, n. sp., BOVALEIUS, (1) p. 50.

Dorycephalus, n. g., *id.* p. 75 (to include 2 spp. described as *Leptocotis*).

Streetsia carinata, n. sp., *id.* p. 87, pls. iii & iv.

✓ *Cranocephalus*, n. g., *goësi*, n. sp., *id.* p. 94, pl. iv.

✓ *Stebbingella*, n. g., *théli*, n. sp., *id.* p. 101, pl. v.

Xiphocephalidæ, n. fam., *id.* p. 114.

Xiphocephalus lilljeborgi, n. sp., *id.* p. 131, pl. vii.

✓ *Metaprotella*, n. g., with n. spp. *M. excentrica* and *M. problematica*, MAYER, p. 24.

✓ *Dentella*, n. g., with n. spp. *D. californica* and *D. venenosa*, *id.* p. 27.

✓ *Paradentella*, n. g., *bidentata*, n. sp., *id.* p. 29.

✓ *Tritella*, n. g., *pilimana*, n. sp., *id.* p. 30.

✓ *Pseudæginella*, n. g., = *Æginella*, Stebbing; *id.* p. 37.

✓ *Parvipalpus*, n. g., *linea*, n. sp., *id.* p. 38.

- Hemiagina*, n. g., *minuta*, n. sp., *id.* p. 40.
Paracaprella, n. g., *pusilla*, n. sp., *id.* p. 41.
Caprella rapax, *C. telarpax*, *C. hirsuta*, *C. mitis*, *C. eximia*, *C. acanthogaster*, *C. rhopalochir*, *C. drepanochir*, *C. bispinosa*, *C. gracillima*, *C. irregularis*, *C. simplex*, *C. subinermis*, *C. decipiens*, *C. monoceros*, n. spp., *id.* pp. 76-87.
Liropus, n. g., with n. spp. *L. elongatus* and *L. minimus*; *id.* p. 89.
Podalirius minutus, n. sp., *id.* p. 93.
Hippomedon propinquus, n. sp., Sars, (2) p. 57, pl. xxi.
Orchomene amblyops, n. sp., *id.* p. 65, pl. xxv. *O. grimaldii*, n. sp., CHEVREUX (1). *O. hauseni*, n. sp., MEINERT, p. 153, pl. i.
Hyperia dubia, n. sp., G. THOMSON, p. 263.
Lepidepecreum mirabile, n. sp., MEINERT, p. 153, pl. i.
Tryphosa erosa, *T. serra*, n. spp., *id.* p. 155, pl. i.
Harpinia antennaria, n. sp., *id.* p. 160.
Chimæropsis danica, n. g. & sp., *id.* p. 167.
Cheirocratus drechselii, n. sp., *id.* p. 170.

Sub-class 2. GNATHOPODA = ENTOMOSTRACA.

Legion 1. BRANCHIOPODA.

Order 1. PHYLLOPODA.

- Branchippus (Chirocephalus) cervicornis*, n. sp., WELTNER.
 †*Ceratiocaris pusilla*, n. sp., ETHERIDGE. From the Silurian rocks of N. Brunswick, where it is very abundant.

Order 2. CLADOCERA.

- Daphnia schmackeri*, n. sp., POPPE & RICHARD, (1) p. 74. *D. dentata*, n. sp., MATILE, p. 117, figs. 3 & 4.
Bosmina japonica, n. sp., POPPE & RICHARD, p. 76.
Ceriodaphnia setosa, n. sp., MATILE, p. 128, fig. 17.
Macrothrix borysthénica, n. sp., *id.* p. 166, fig. 50.

Legion 2. LOPHYROPODA.

Order 3. OSTRACODA.

- †*Primitia humilior*, †*P. morgani*, †*P. ulrichi*, †*P. whitfieldi*, n. spp., JONES, (1) pp. 5-10, pl. iv. †*P. clarkei*, †*P. walcotti*, †*P. billingsii*, n. spp., *id.* (3) pp. 535, 543, & 547.

- †*Entomis rhomboidea*, n. sp., *id.* (1) p. 10. †*E. richteri*, *id.*, (2) p. 321.
 †*Strepula sigmoidalis*, n. sp., *id.* (1) p. 11. †*S. plantaris*, *id.*, (3) p. 540.
 †*Isochilena lineata*, †*I.* (?) *fabacea*, n. spp., *id.*, (1) p. 21, pl. ii.
 †*Leperditia claypolei*, n. sp., *id.*, (1) p. 25, pl. iii. †*L. frontalis*, n. sp.,
id., (3) p. 547.
 †*Xestolebris wrightii*, n. sp., *id.*, (1) p. 28, pl. iv. *X. gracilis*, n. sp.,
 BRADY, (2) p. 508.
 †*Beyrichia hallii*, n. sp., JONES, (1) p. 15. †*B. subquadrata*, †*B. kolmo-*
dini, †*B. diffusa*, n. spp., *id.* (3) pp. 537 & 546, pl. xx.
 †*Bollia bilobata*, †*B. hindei*, †*B. semilunata*, n. spp., *id.* (3) pp. 540 &
 548.
 †*Octonaria linmarssoni*, n. sp., *id.*, p. 541.
 †*Ulrichia* n. g., *conradi* n. sp., *id.* p. 544.
 †*Bythocypris* (?) *lindstroemi* and †*B.* (?) *obtusa*, n. spp., *id.* p. 548.
 †*Bairdia anticosiensis*, n. sp., *id.* p. 548. *B. truncata*, *B. nodulifera*,
 n. spp., BRADY, (2) p. 494, pls. i & ii.
 †*Macrocypris* (?) *subcylindrica*, n. sp., JONES, (3) p. 549.
 †*Polycopse sublenticularis*, n. sp., *id.* p. 550.
Pontocypris gracilis, n. sp., BRADY, (2) p. 491, pl. i.
Anchistrocheles fumata, n. sp., *id.* p. 497.
Cythere crenata, *C. ochracea*, *C. inflata*, *C. caudata*, *C. scotti*, *C. cuneolus*,
C. torticollis, *C. deltoides*, *C. infundibulata*, *C. labiata*, *C. ichthyoderma*,
C. quadriserialis, n. spp., *id.*, pp. 497–504, pl. ii.
Linnicythere fijiensis, n. sp., *id.* p. 505.
Cytheridea flavescens, *C. consobrina*, n. spp., *id.* p. 506.
Loxoconcha gracilis, n. sp., *id.*, p. 506.
Cytherura marcida, *C. entomon*, *C. scutellata*, n. spp., *id.* p. 508, pl. iii.
Cytheropteron coccoides, *C. rude*, *C. longicaudatum*, *C. guttatum*, *C.* (?)
trilobites, n. spp., *id.* p. 510.
Paradoxostoma ovatum, *P. novæ-caledoniæ*, *P. retusum*, n. spp., *id.* p. 512.
Philomedes vellicata, n. sp., *id.*, p. 513, *Pleoschisma*, n. g., with n. spp.,
P. robusta, *P. moroides*, *P. reticulata*, *id.* p. 513.
Asterope cylindrica, *A. australis*, n. spp., *id.* p. 515, pl. iv.
 †*Streptoleberis* n. g., *crenulata* n. sp., *id.* p. 515, pl. iv.
Sarsiella sculpta, *S. simplex*, *S. rudis*, *S. foveata*, n. spp., *id.* p. 516.
Cytherella (?) *tumida*, n. sp., *id.* p. 518.
Haloocypris dubia, n. sp., MÜLLER, (2) p. 269, pl. xxviii.
Conchæcia striata, *C. cuneata*, *C. oblonga*, *C. variabilis*, *C. roduntata*,
C. caudata, n. spp., *id.* p. 270.
 †*Euconchæcia* n. g., *chierchii* n. sp., *id.* p. 277, pl. xxviii.
 †*Cyphaspis acanthina*, n. sp., COIGNU.
 †*Curtonotus antiquus*, n. sp., RISTORI.
Cypridina hilgendorffi, n. sp., MÜLLER, (1) p. 228, pls. xxv–xxvii.
 †*Pyrocypris*, n. g., with n. spp. *chierchiæ*, *rivilli*, *mollis*, *punctata*, *ameri-*
cana, *japonica*, *id.* p. 230.
Philomedes japonica, *P. sordida*, n. spp., *id.* p. 236, pls. xxv–xxvii.
Asterope brevis, *A. americana*, *A. hilgendorffi*, *A. fusca*, n. spp., *id.* p. 239.

Order 4. COPEPODA.

CANU (3).

Diaptomus loveni, n. sp., DE GUERNE & RICHARD, (1) p. 177. *D. alluardi*, n. sp., *id.* (2).

✓*Sapphir* n. g., *rostratus* n. sp., CAR, p. 268, pl. xiv.

DAHL observes that LAZAR has redescribed BRADY'S sp. *Gonyopsyllus rostratus* under the title of "*Sapphir*, a new Copepod from Trieste."

Hersiliodes canuensis, n. sp., BOURNE, (2) p. 379, pl. xxv.

✓*Bæckella*, n. g., DE GUERNE & RICHARD, (3) p. 151 (to include *Diaptomus brasiliensis*, Lubbock, and *Bæckia triasticulata*, G. M. Thomson).

Monstrilla longispinosa, n. sp., BOURNE (3).

Bradya edwardsii, n. sp., RICHARD (1).

✓*Schmuckeria forbesi*, n. g. & sp., POPPE & RICHARD (2).

Lepeoptheirus huttoni, n. sp., THOMSON, (2) p. 354, pls. xxviii & xxix.

Dinematura hamiltoni, n. sp., *id.* p. 357, pl. xxv; also *D. neo-zealanica*, n. sp., and *D. carcharodonti*, n. sp., *id.*

Lernanthropus percis, n. sp., *id.* p. 366, pl. xxvii.

Penella histiophori, n. sp., *id.* p. 368, pl. xxviii.

Lerneæ lotellæ, n. sp., *id.* p. 369, pl. xxviii.

Lesteira kroyeri, n. sp., *id.* p. 370, pl. xxviii.

Chondracanthus chilomycteri, *C. genypteri*, *C. lotellæ*, n. spp., *id.* p. 371, pl. xxviii.

Lernæopoda musteli, n. sp., *id.* p. 373, pl. xxviii.

Brachiella parkeri, n. sp., *id.* p. 374, pl. xxviii.

Legion 3. ANCHORACEPHALA.

Order 5. CIRRHIPEDIA.

✓*Dendrogaster astericola*, n. g. & sp., KNIPOWITSCH. See also VAN BENEDEN.

III.—MORPHOLOGY.

General.

MAYER deals with the Morphology of the *Caprellidæ* on pp. 104-151 of his monograph.

BONNIER (1) discusses the dimorphism of the males of *Orchestia littorea* and *Bathyporeia pilosa*.

BLANC has described two forms of *O. littorea*, of which Bonnier shows only one—that with swollen meropodite and carpopodite on the seventh pereopod—to be functionally sexual.

BONNIER believes that the form described by Spence Bate as *Bathyporeia robertsoni* is the sexually mature male of *B. pilosa*, which is an 1890. [VOL. XXVII.] E 2

immature male form. *B. pelagica*, Spence Bate, must be considered as the female of the same species.

BOUVIER (5, 6) compares the structure of *Dromia* with that of more normal *Brachyura*, with special reference to the vascular system.

POUCHET (1) has found females of *Dias longiremis* infested throughout almost all the spaces of the body by parasitic masses of granular protoplasm which, when passed out at the anus, develop into active biflagellate forms.

SARS (1) gives a minute account, with anatomical drawings of the larval stages, of the following species of the *Crangonidae* :—

Crangon vulgaris, *C. allmanni*.

Cheraphilus echinulatus, *C. nanus*.

Pontophilus spinosus, *P. norvegicus*.

Sabinea septemcarinata.

Sclerocrangon boreas.

Habits.

Newly-hatched Nauplii of *Balanus* seek the light, or are positively heliotropic, when the light is subdued. If the light is strong, they become negatively heliotropic. Both ends of the spectrum are effective, but the violet rays exercise the stronger influence. The tendency towards migration is not inherent, since it does not take place while the light is constant. These facts serve to explain the daily migration, to and from the surface, of pelagic fauna. GROOM & LOEB.

THOMPSON (1) finds the use of the electric light very valuable in drawing rare species of minute Crustaceans from their retreats.

See also STERRY, HARGITT, HERDMANN, HOLT, WEISS.

Sense Organs.

An examination of the eyes of *Cambarus setosus*, a blind Crayfish from the caves of Missouri, and of *C. pellucidus*, from the Mammoth Cave, establishes the presence of an optic ganglion and nerve in both species. *C. pellucidus* presents more distinct retinal traces. PARKER, S. H. (2).

BEDDARD (1) continues his researches on the structure of the eye of *Isopoda*. [See Zool. Rec. xxv, *Crust.*, Beddard.] The type now discussed is *Arcturus*. The shallow water forms (*A. furcatus*, *A. americanus*, *A. studei*) have clear and transparent lenses. In some of the deep water forms an opacity in the lens is apparent. In others the lens is reduced in size and altered in shape. The retinula cells are small, a possible indication of degeneration, while the rhabdom is relatively large in the deep sea forms.

Respiratory Organs and Appendages.

BOUVIER (1) finds that the blood distributed by the antennary arteries to the carapace of *Decapoda* does not pass to the gills, but is returned

direct to the pericardium. As in *Mysis* forms, the membrane of the carapace is used as a respiratory organ. This organ permits land-crabs to live long out of the water.

ANDREWS has experimented upon crabs, with a view to investigating their power of throwing off limbs. The action has its reflex nervous centre in the thoracic mass. Autotomy always occurs at a fixed spot—in the second joint of the appendage. This spot may correspond to the second joint of *Macrura*, as the second and third segments of the macruran appendage are fused in *Brachyura*. There is a definite plane of rupture, with a modification of the exoskeleton and an internal membranous septum.

Excretory Organs.

MARCHAL (1) has some new observations on the green glands of the Crayfish. The septa of the sacculæ are so arranged that its cavity has a racemose form, the two main lobes being separated by a large median septum. The green substance is a plexus of anastomosing canals giving off diverticula which end in ampullæ. With regard to the white substance, Wassiliew's views are maintained, as against those of Szigethy and Rawitz.

MARCHAL describes the excretory organs of various decapod forms: *Carcinus* (1), *Homarus*, *Palæmon*, *Pagurus*, *Galathea*, *Stenorhynchus* (2), *Palinurus*, *Gebia*, and *Crangon* (3).

MARCHAL (4) considers:—(1) That the operculum of the excretory orifice of *Brachyura* is homologous with the first joint of the antennæ of *Macrura*. (2) The basilar peduncle of the antenna consists fundamentally of five joints in both groups. (3) The exopodite exists in a rudimentary form in many types (e.g., *Galathea*), where it is generally considered to be absent.

Alimentary System.

COSTES discusses the glands connected with the alimentary canal of *Decapoda*. He finds in some forms, but not in *Macrura*, a gland hitherto undescribed, at the anterior part of the sternal plastron. It is analogous to the intestinal glands, but its cells are filled with numerous spherical globules. The external opening of the gland is either on the sternal plate, or just in front of the first maxillipede.

Generation and Development.

HERRMANN has studied the spermatoblasts of *Decapoda*. He obtained satisfactory results by placing the contents of the testicles in a drop of blood-serum from the animal, and exposing them to the vapour of strong osmic acid. The male ovule is described, and its division by karyokinesis into spermatoblasts, which, again, develop into spermatozooids. The forms peculiar to various decapod types are described.

HÄCKER observes four stages in the egg of *Cyclops* immediately previous to fertilization :—(A.) There is a single large macronucleus or two smaller macronuclei, much vacuolated. Near by there are two small faintly coloured micronuclei. There are eight pairs of parallel threads scattered throughout the egg. (B.) The nuclear-membrane has disappeared. The macronucleus is diminished in size, but the micronuclei are still present. The threads have arranged themselves in four pairs at either pole. (C.) Eight rod-like chromosomes, apparently derived from the threads observed in A. and B., are seen in the membraneless nucleus. Near the nucleus an isolated mass of protoplasm appears. (D.) A distinct spindle-shaped figure is formed, four of the chromosomes moving off towards either pole.

SOLGER has observed the formation of both polar bodies in the case of numerous eggs of *Balanus improvisus*. The phenomena are similar to those described by Nussbaum as occurring in the case of *Pollicipes*.

LEICHMANN opposes Rosenstadt's view that the oviposition of *Asellina* exactly resembles that of *Oniscus*. The genital orifices do not disappear at the ecdysis which follows fertilization, but are hidden by brood-lamellæ. Fertilization takes place in the ovary, the middle part of the oviduct previously swelling to form a receptaculum seminis.

PARKER (1) deals with the minute structure and development of the eye of the lobster. With regard to the general type of structure, he disagrees with the views of Patten, Reichenbach, and Kingsley, and considers that the retina is formed from a thickened portion of the hypodermis which undergoes no involution. Whatever involution takes place probably concerns the optic ganglion alone.

LEBEDINSKI describes the development of the crab *Eriphya spinifrons* as far as the zoea stage. A thick germinal disc appears, which gives rise to all three layers. Two new independent thickenings in front of the disc form the cephalic lobes and give rise to the brain, eyes, etc. The subsequent changes in the disc and the cephalic lobes are dealt with in detail. The first appearance and later structure of the heart are described. The rudiments of segmental organs appear shortly before the zoea stage, and resemble homologous structure in Annelids and *Mollusca*.

HERRICK has investigated the development of *Homarus*, and finds it to resemble strongly that of *Alpheus*, except in the earlier stages. The pyramid structure of the yolk is not observable. Protoplasm migrates from the centre to the periphery. Gastrulation commences with a small patch of cells at one side of the egg, which contains a circular depression—the blastopore. The naupliar appendages appear nearly simultaneously. The endoblast is established at a late stage, when eight or ten pairs of appendages are visible.

CANU (1) finds, in opposition to the views of Claus and Della Valle, that the Copepod genus *Enterocola* is without mandibles. These appendages are lost during the passage from the last nauplian to the first cyclopoid stage. In the female, the second cyclopoid stage is that at which the parasite seeks its host, thereafter to become stationary. This is not the

case with the male, which more approaches the semi-parasitic form of *Notodelphys*.

CANU (2) briefly discusses the stages of the development of the *Notodelphydæ* and the *Enterocolidæ* parasitic on Ascidians. The female apparatus of the *Malacostraca* is normally double, though fusion has taken place in most of the *Decapoda*. Of this group the *Peneidæ* are the most primitive. Among the *Brachyura* vagina and receptaculum seminis are present, correlated with an intromittent organ in the male.

The female organs of various types are described in detail. CANU (1).

IV.—PHYSIOLOGY.

BLANCHARD (1) has investigated the colouring matter of the bright red *Diaptomus bacillifer*. It was obtained in the form of a powder which, on exposure to air, gradually faded to a brick red, then to yellow, and finally to white, even when kept in the dark. Its behaviour under reagents strongly resembled that of Carotene.

For the occurrence of cellulose in *Arthropoda*, see AMBRONN (1).

RUTHERFORD discusses the microscopical appearances of the striped muscle of the crab and lobster. He maintains, in opposition to Melland and Gehuchten, that the sarcous matter essentially consists of contractile fibrils, with an interstitial substance between them. The protoplasm of the fibrils appears homogeneous, but it really forms a network with fluid in its interstices. Of the alternate segments of the fibrils, "Bowman's elements" are the longest and the only really contractile. Their appearance and behaviour during contraction are minutely described.

The metallic brilliancy of the *Sapphirinidæ* is due to interference resulting from their films. The colours are not those of a grating. Beneath the chitinous investment there is a layer of crystals, which probably increase the intensity of the colours by furnishing a strongly reflecting surface. AMBRONN (2).

V.—CLASSIFICATION.

HANSEN discusses the characteristics of the *Cirolana-Cymothoa* group, which he divides, chiefly on the basis of their mouth structure, into the six following families: *Cirolanidæ*, *Corallanidæ*, *Alcironidæ*, *Barybrotidæ*, *Ægidæ*, and *Cymothoidæ*. The characteristics of each family are briefly given, and the *Cymothoidæ* are then dealt with in detail.

BOVALLIUS (1) publishes a monograph on the Oxycephalids. A historical introduction, with a useful bibliography, is followed by a discussion of the systematic position of the group. On the basis of the shape, point of fixture, and flagellum of the first pair of antennæ, he divides the *Hyperidea* into—I, *Reticornia*; II, *Filicornia*; III, *Curvicornia*. The last

group includes the *Platyscelidæ*, *Phorcidæ*, and *Oxycephalidæ* of Spence Bate. Bovallius divides it into eight families, including the *Oxycephalidæ*. These are defined as having the telson coalesced with the last ural segment, and the seventh pair of pereopoda complete, and not transformed.

BOURNE (3) considers *Monstrilla* to be a free-swimming and not a parasitic form. It may be an ephemeral reproducing form, with a predaceous larva, but the young forms taken by Norman scarcely support this view.

The *Monstrillidæ* may be classed as a subfamily of the *Corycæidæ*. The genus *Monstrilla* is re-defined, and six species recognized.

VI.—GEOGRAPHICAL DISTRIBUTION.

General.

MAYER deals with the geographical distribution of the *Caprellidæ* on pp. 94-103 of his monograph.

The distribution of freshwater *Calanidæ* is discussed by DE GUERNE & RICHARD (4).

IMHOFF, O. E. (3) enumerates 29 species and 4 varieties of the genus *Bosmina*. Only two of the species are extra-European, *B. macrorhynca* from Egypt, and *B. striata* from N. America.

DE GUERNE & RICHARD exhibit, by means of a map and a tabulated list, the distribution of 77 species of freshwater *Calanidæ*. Only one (*Diaptomus*) of the ten genera appears to be cosmopolitan. Six genera have been found in the northern hemisphere only. The *Calanidæ* of the north seas are able to bear great cold, and much alteration in the saltness of the water. This seems particularly to have been the case with *Diaptomus*. The freshwater are derived from the marine forms.

British Isles.

Crustacea taken off the S.W. of Ireland; BOURNE (1).

Surface collections from the N. Sea, and from the W. of Scotland; *id.* (2).

Brachyura from Cornwall; CORNISH.

Palæozoic *Ostracoda* from Wales and Ireland; JONES (1).

Some *Crustacea* from the Forth; SCOTT.

Copepoda from Liverpool Bay; THOMPSON, J. C.

European.

Pelagic *Crustacea* from the G. of Marseilles; GOURRET.

Terrestrial *Isopoda* of Marseilles; AUBERT, &c.

Decapoda from the G. of Naples; CANO (2).

Epicaridæ from the G. of Naples; GIARD & BONNIER (2).

Copepoda from the neighbourhood of Boulogne; CANU (3).

French *Isopoda* ; DOLLFUS (3).

Swiss forms of *Diaptomus* ; IMHOF (4).

Ostracoda (palæozoic) from France and the Bosphorus ; JONES (3).

Crustacea from Mayenne ; LABBÉ.

Cladocera from Moscow ; MATILE.

Malacostraca from Kanonbad ; MEINERT.

Entomostraca from Belle Isle, &c. ; RICHARD.

Crustacea of Norway ; SARS (2).

IMHOF (1) concludes his account of the pelagic fauna of the mountain lakes of Carinthia. The most uniformly distributed of the *Cladocera* is *Daphnella brachyura*, which is only absent in three lakes. *Bosmina* was represented in sixteen lakes, *Daphnia* in twelve. Several other *Cladocera* occurred more rarely, but most of them are really littoral or ground-living, rather than pelagic. The pelagic *Copepoda* of the Carinthian lakes comprise species of *Cyclops* and *Diaptomus*.

African and Asiatic.

Algerian *Crustacea* ; BLANCHARD & RICHARD.

A new *Diaptomus* from the Congo ; DE GUERNE & RICHARD.

Entomostraca from Japan and China.

Leptodora from Japan ; FRITZE.

Crustacea from the China Sea ; POCKOCK (1).

Neurctic.

N. American Crayfishes ; FAXON.

Palæozoic *Ostracoda* from N. America, &c. ; JONES (1, 3).

Amphipoda from S. Georgia ; PFEFFER (3).

N. American palæozoic *Crustacea* ; VOGDES.

Australasian and Oceanic.

Ostracoda from the South Sea Islands ; BRADY (2).

New Zealand *Crustacea* ; THOMSON, G. M.

Freshwater Crayfish from New Zealand ; CHILTON.

Marine and freshwater *Crustacea* from Port Jackson ; WHITELEGGE.

ARACHNIDA.

BŸ

R. INNES POCKOCK.

TITLES OF PAPERS*

ON ANATOMY, PHYSIOLOGY, ETC., OF ARACHNIDA (S.S.)
(ACARI EXCEPTED).

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- . Ueber die Eierzahl bei *Heteropoda* sp. aus Natal. T. c. pp. 23 & 24.
- BOYS, C. V. Notes on the Habits of some Common English Spiders. Nature, xliii, pp. 40 & 41.
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- . (2) Note sur la Structure Anatomique du Peigne des Scorpions et des Raquettes Coxales des Galéodés. T. c. p. 57.
- . (3) Note sur le Mouvement des Membres et des Poils Articulés chez les Arthropodes. T. c. p. 118.
- . (4) Observations nouvelles sur le Mouvement des Membres et des Poils Tactiles des Arachnides. C.R. Soc. Philom. (8) ii, p. 15.
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* An asterisk prefixed to a quotation indicates that the Recorder has not seen the journal or work referred to.

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- . (3) Description of a New Genus and Species of Scorpion belonging to the Group *Jurini*. T. c. pp. 250-252.
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- . (2) Étude sur les Arachnides recueillis par M. L. von Höhnelt . . . dans l'Afrique orientale équatoriale en 1887-1888. T. c. pp. 125-130.
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- . (2) Aracnidi di Nias e di Sumatra raccolti nel 1886 dal Sig. E. Modigliani. Op. cit. x, pp. 5-106.
- . (3) Diagnoses Araneorum aliquot novarum in Indo-Malesia inventarum. T. c. pp. 132-172.
- . (4) Aracnidi di Pinang raccolti nel 1889 dai signori L. Loria e L. Fea. T. c. pp. 269-383.
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- . (4) The Long-legged Harvest Spider. T. c. pp. 866 & 867.
- . (5) The Harvest Spiders of North America. T. c. pp. 914-918.

DISTRIBUTION.

PALÆARCTIC REGION.

- Britain.* CAMBRIDGE (*Opiliones*).
Russia. BIRULA (*Solpugæ*).
Hungary. LENDL (*Tetragnathidæ*).
Germany, Crete, Teneriffe. HEYDEN (*Araneæ*).
Arabia. SIMON (1) (*Arachnida*).

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- SIMON (2) (*Arachnida*).
 POCKOCK (1, 4) (*Scorpiones*).

ORIENTAL REGION.

- India.* POCKOCK (2, 3) (*Scorpiones*).
Malaysia and Papua. THORELL (1, 3) (*Araneæ*).
Sumatra and Nias. THORELL (2) (*Arachnida*).
Penang. THORELL (4) (*Arachnida*).

AUSTRALIAN REGION.

- Marianne Is.* SIMON (3).
Oahu, Sydney, Peak Downs. KEYSERLING (*Araneæ*).

NEARCTIC REGION.

- MARX (1, 2) (*Araneæ*).
 WEED (1-5) (*Opiliones*).
 SCUDDER (*Carboniferous Arachnida*).

NEOTROPICAL REGION.

- BALZAN (*Pseudoscorpiones*).

ARANEÆ.

EPEIRIDÆ.

Gastracantha, notes on the genus and allied genera and subgenera, pp. 44-46; THORELL (1).

Gastracantha mendei, Keys., syn. *malayensis*, Sim., Borneo, Sumatra, &c., pp. 46 & 47; *fornicata* (Fabr.), Java, Borneo, &c., pp. 47-51; *bubula*, n. var., Sumatra, pp. 49 & 51; *vittata*, Thor., Java, Sumatra, Borneo, &c., pp. 51-53; *montana*, n. sp., Singalang, pp. 53-55; *devia*, Sim., syn. *harpax*, Cambr., Sarawak, pp. 56 & 57; *butleri*, Thor., ? syn. *annulipes*, Gieb., Celebes, p. 57; *leucomelena* (Dol.), Sumatra, Java, pp. 58-61; *cuspidata*, C. Koch, Java, pp. 61 & 62; *brevispina* (Dol.), with syns., Java, Sumatra, pp. 63-65; *id.* (1): *schweinfurthi*, n. sp., Menatha (Arabia), p. 100; *lepida*, Cambr., Massana, p. 100; SIMON (1).

Plectana arcuata (Fabr.), Borneo, Sumatra, &c., pp. 65-68; *blackwallii*, Keys., Borneo, Sumatra, pp. 68-70; *hasseltii* (C. Koch), with syns., Java, Sumatra, pp. 70-75; THORELL (1).

Paraplectana maritata, Cambr., syn. *nigroanalis*, Hasselt, Sumatra, p. 76; *id.* (1).

Stanneoclavis latronum, n. sp., pp. 133 & 134, Agrigan and Grani ; SIMON (3).

Cerostris paradoxa (Dol.), ? syn. *mitralis*, Vins., Java, pp. 77 & 78 ; THORELL (1).

Cyrtarachne perspicillata (Dol.), Java, Sumatra, pp. 78 & 79 ; *levis*, Thor., Celebes, pp. 79-81 ; *lepida*, n. sp., Sumatra, pp. 80-82 ; *id.* (1) : *coccinella*, n. sp., Nias, pp. 27-34 ; *id.* (2).

Poltys elevatus, n. sp., Sumatra, pp. 82-87 ; *columnani*, n. sp., Sumatra, pp. 87-90 ; *id.* (1) : *pygmaeus*, n. sp., Sumatra, pp. 29-32 ; *id.* (2).

Argiope catenulata (Dol.), syn. *opulenta*, Thor., *stellata*, Stol., Java, Sumatra, pp. 90-92 ; *chelifera* (Hass.), Sumatra, pp. 92-94 ; *œmula* (Walck.), Java, &c., p. 94 ; *versicolor* (Dol.), Java, Sumatra, pp. 95-98 ; *pumila*, n. sp., Sumatra, pp. 99 & 100 ; *id.* (1) : *clarki*, Blckw., Djebel Milhan (Arabia), p. 101 ; *nigripes*, n. sp., Agaos (Ethiopia), p. 101 ; SIMON (1).

Gea (Ebæa) subarmata, n. sp., Sarawak, Java, &c., pp. 101-104 ; *decorata*, n. sp., Sumatra, pp. 104-107 ; *guttata*, n. sp., Sumatra, pp. 107-109 ; THORELL (1).

† *Enetira*, n. g., pp. 109 & 110, type *moluccensis* (Dol.) ; *forbesii*, n. sp., Sumatra, pp. 111-115 ; *id.* (1).

† *Cyrtophora acalypthoides*, Sim., Aden, p. 102 ; SIMON (1).

† *Chodalía*, n. g., pp. 115 & 116 ; *harpax*, n. sp., Sumatra, pp. 116-120 ; THORELL (1).

Epeira gonida, n. var. *virens*, Java, p. 120 ; *virguncula*, n. sp., Sumatra, pp. 121 & 122 ; *cæstata*, n. sp., Sumatra, pp. 122-125 ; *de haanii*, Dol., syn. *spectabilis*, Dol., *kandarensis*, Thor., Sumatra, Celebes, &c., pp. 125-127 ; *diazoma*, n. sp., Sumatra, pp. 127-130 ; *origena*, n. sp., Sumatra, pp. 130-135 ; *nephileodes*, n. sp., ? Java, pp. 136 & 137 ; *prospiciens*, n. sp., Sumatra, pp. 138-143 ; *sononis*, ? syn. *triangula*, Hass., Sumatra, pp. 143-146 ; *punctigera*, Dol., Java, Celebes, &c., pp. 147 & 148 ; *pullata*, Thor., Sumatra, pp. 148-150 ; *theisii*, Walck, Java, India, &c., pp. 150 & 151 ; *inusta*, L. Koch, syn. *weyersii*, Sim., Sumatra, pp. 151-154 ; *prasia*, n. sp., Java, pp. 154-156 ; *herbea*, n. sp., Sumatra, pp. 156-158 ; *pupula*, n. sp., loc. ?, pp. 159-161 ; *seriata*, Thor., Java, pp. 161-164 ; *petax*, n. sp., loc. ?, pp. 164-167 ; *laglaizei*, Sim., n. var. *ecaudata*, Sumatra, pp. 167 & 168 ; *centrodes*, n. sp., Sumatra, pp. 169-173 ; *spathura*, n. sp., Sumatra, pp. 173-175 ; *anseripes*, Walck, Indo-Malaysia, pp. 175 & 176 ; *caligata*, n. sp., Sumatra, pp. 176-179 ; *id.* (1) : *hemirara*, n. sp., Penang, pp. 301-304 ; *id.* (4) : *suedicola*, n. sp., Cheikh Othman (Arabia), p. 103 ; *nautica*, L. Koch, Aden, pp. 103 & 104 ; *modesta*, n. sp., Aden, pp. 104 & 105 ; SIMON (1) : *bertkaui*, n. sp., p. 233, pl. xxi, fig. 1 ; KEYSERLING.

Milonia, n. g., pp. 179 & 180, *brevipes*, n. sp., Sumatra, pp. 180-183 ; *trifasciata*, n. sp., Java, pp. 183-187 ; THORELL (1).

Nephilengys malabarensis, Walck, n. var. *annulipes*, Sumatra, Java, pp. 188 & 189 ; *id.* (1).

Nephila schweinfurthi, n. sp., Djebel Milhan, p. 105 ; SIMON (1).

Larinia diluta (Thor.), syn. *Lipocrea diluta*, Thor., Nias, Sumatra, pp. 24-26 ; THORELL (2).

√ *Callinethis*, n. g., for *C. grata* (Guér.), type *fastuosa*, Thor., *auro-cincta*, Thor. (sub *Meta*), pp. 191-193 ; *id.* (1) ; *superba*, n. sp., Nias, pp. 15-18 ; *id.* (2).

Argyropeira hasseltii, n. sp., Sumatra, pp. 194-196 ; *nigro-vittata* (Dol.), Sumatra, pp. 196-198 ; *argentina* (Hass.), Sumatra, pp. 199 & 200 ; *id.* (1) : n. var. *nigriceps*, Pinang, p. 297 ; *id.* (4) ; *scalaris*, n. sp., Sumatra, pp. 200-204 ; *stictopyga*, n. sp., Sumatra, pp. 204-206 ; *gemmea* (Hass.), Sumatra, pp. 206 & 207 ; *id.* (1) : *quadrifasciata*, n. sp., Sumatra, pp. 18-21 ; *emertonii*, n. sp., Nias, pp. 22-24 ; *id.* (2).

√ *Orsinome*, n. g., p. 208, type *vethii* (Hass.), Sumatra, pp. 209-214 ; *id.* (1).

TETRAGNATHIDÆ.

Tetragnatha fronto, n. sp., Sumatra, pp. 214-217 ; *hesseltii*, n. sp., Celebes, pp. 217-221 ; *mandibulata*, Walck, Java, pp. 221-223 ; THORELL (1) : *nigrita*, Lendl, Hungary, pp. 9 & 10, figs. 6-8 ; LENDL.

Eucta lutescens, Lendl, Hungary, pp. 8 & 9, pl. i, figs. 1-5 ; *id.* : *javana*, n. sp., Java, pp. 336-338 ; THORELL (1).

Eugnatha picta, Lendl, Hungary, pp. 10 & 11, pl. i, figs. 9-11 ; LENDL.

√ *Limoxera*, n. g., pp. 223 & 224, *lineata*, n. sp., loc. ?, pp. 224-227 ; *gracillima*, n. sp., Sumatra, pp. 227-230 ; *marginata*, n. sp., Sumatra, pp. 230-232 ; THORELL (1) ; *chauliodus*, n. sp., Pinang, pp. 292-295 ; *id.* (4).

√ *Mitoscelis*, n. g., pp. 232-233, *aculeata*, n. sp., Java, pp. 233-235 ; *id.* (4).

ULOBORIDÆ.

Uloborus trifasciatus, n. sp., Nias, pp. 12-14 ; THORELL (2) : *punctiventris*, n. sp., Aden, p. 84 ; SIMON (1) : *pantherinus*, n. sp., Sydney, p. 234, pl. xxi, fig. 2 ; KEYSERLING.

CRYPTOTHELIDÆ.

Cryptothele sundaica, n. sp., Pinang, pp. 305-308 ; THORELL (4) : *marchei*, n. sp., Guam, p. 132 ; *doreyana*, n. sp., New Guinea, p. 132 ; SIMON (3).

ŒCOBIIDÆ.

Œcobius petronius, n. sp., Aden, p. 85 ; SIMON (1).

MIAGRAMMOPIDÆ.

Miagrammopes caudata, n. sp., Peak Downs, pp. 253 & 254, pl. xxiii, fig. 5 ; KEYSERLING.

THERIDIIDÆ.

Phoroncidia aciculata, Thor., Celebes, p. 240; *hexacantha*, n. sp., Sumatra, pp. 240-243; *lygæna* (Walck.), syn. *acrosomoides*, Hass., Sumatra, pp. 243-247; THORELL (1).

Argyrodes sumatranus, n. sp., Sumatra, pp. 247-250; *miniaceus* (Dol.), pp. 247 & 248 (in note); THORELL (1): *incisifrons*, n. sp., Bowen, pp. 246 & 247, pl. xxii, figs. 5 & 6; KEYSERLING.

Linyphia becarii, n. sp., Sumatra, pp. 250-254; *phyllophora*, n. sp., Sumatra, pp. 254-256; *id. t. c.*

Thwaitesia argentata, n. sp., Sumatra, pp. 256-259; *id. t. c.*

Chrysso (?) *quadrata*, Cambr., Sumatra, pp. 259-262; *alearia*, n. sp., Java, pp. 262 & 263; *id. t. c.*

Theridium trigonicum, n. sp., Sumatra, Java, pp. 263-265; *oxyurum*, n. sp., Java, pp. 266 & 267; *biseriatum*, n. sp., Sumatra, pp. 267-270; *tepidariorum*, C. Koch, Sumatra, pp. 270 & 271; *rufipes*, Luc., Sumatra, pp. 271-273; *zonulatum*, n. sp., Sumatra, pp. 273-275; *decem-maculatum*, n. sp., Sumatra, pp. 275-277; *ludekingii*, n. sp., Java, pp. 277-279; THORELL (1): *incanescens*, n. sp., Aden, p. 97; *dialeucon*, n. sp., Aden, pp. 97 & 98; *fruticum*, n. sp., Aden, p. 99; SIMON (1): *convexum*, n. sp., Peak Downs, &c., pp. 241 & 242, pl. xxii, fig. 1; *properum*, n. sp., Sydney, pp. 242 & 243, pl. xxii, fig. 2; *extrilidum*, n. sp., Sydney, pp. 244 & 245, pl. xxii, fig. 3; *gigantipes*, n. sp., Middle Harbour, pp. 245 & 246, pl. xxii, fig. 4; KEYSERLING.

✓ *Helvidia*, n. g., pp. 279 & 280, *scabricula*, n. sp., Sumatra, pp. 280-283; THORELL (1).

Lascola pulicaria, n. sp., Sumatra, pp. 283-285; *picta*, n. sp., Sumatra, pp. 285-287; *id. t. c.*

✓ *Stethopoma*, n. g., pp. 288 & 289; *cingulatum*, n. sp., Java, Sumatra, pp. 289-293; *id. t. c.*

✓ *Ozaleus*, n. g., pp. 293 & 294, *tarandus*, n. sp., ? loc.; *id. t. c.*

Lathrodectus hystrix, n. sp., Aden, p. 99; *geometricus*, C. Koch, Aden, pp. 99 & 100; SIMON (1).

Ulesanis sextuberculata, n. sp., Gayndah, pp. 235 & 236, pl. xxii, fig. 3; KEYSERLING.

Wirada rotunda, n. sp., Peak Downs, pp. 236 & 237, pl. xxi, fig. 4; *id.*

Ariamnes colubrinus, n. sp., Peak Downs, pp. 237-239, pl. xxi, fig. 5; *id.*

✓ *Tobesoa*, n. g., p. 241, *theridioides*, n. sp., Sydney, &c., pp. 240 & 241, pl. xxi, fig. 6; *id.*

Euryopsis elegans, n. sp., Peak Downs, pp. 249 & 250, pl. xxiii, fig. 1; *id.*

Lathys alba, n. sp., Sydney, pp. 250 & 251, pl. xxiii, fig. 2; *maculata*, n. sp., p. 251, pl. xxiii, fig. 3; *id.*

Episinus australis, n. sp., Peak Downs, pp. 251-253, pl. xxiii, fig. 1; *id.*

PHOLCIDÆ.

Pholcus gracillimus, n. sp., Sumatra, pp. 298 & 299; THORELL (1).

Artema pristina, n. sp., Aden, pp. 93 & 94; SIMON (1).

- † *Smeringopus*, n. g., p. 94, *lineiventris*, n. sp., Aden, p. 95 ; SIMON (1).
 † *Ninetis*, n. g., pp. 95 & 96, *subtilissima*, n. sp., Aden, p. 96 ; *id.* (1).

SCYTODIDÆ.

Scytodes marmorata, L. Koch, Sumatra, &c., pp. 300 & 301 ; THORELL (1).

Dictis venusta, n. sp., Sumatra, pp. 301-304 ; *id.* (1) : *arabica*, n. sp., Cheikh Othman (Arabia), pp. 88 & 89 ; *perimensis*, n. sp., Perim I., pp. 123 & 124 ; SIMON (1).

PHÆDIM[O]IDÆ.

[New fam., pp. 304-308 ; THORELL (1).]

Phædima picea, n. sp., Sumatra, pp. 305-310 ; *nigra*, n. sp., Sumatra, pp. 310-312 ; *armata*, n. sp., Sumatra, pp. 313-315 ; THORELL (1).

† *Perama*, n. g., pp. 315 & 316 ; *pallida*, n. sp., Sumatra, pp. 316-318 ; *id.* (1).

SPARASSIDÆ.

Spariolenus tæpiatus, n. sp., Nias, pp. 44-47 ; THORELL (2).

Heteropoda venatoria (Linn.), Nias, pp. 47 & 48 ; *modigliani*, n. sp., Nias, pp. 48-53 ; *id.* (2) : *debilis*, Thor. ; *gracilipes*, Thor. ; *sumatrana*, Thor., n. var. *montana* ; *signalia*, Thor., Sumatra, pp. 144 & 145 ; *obtusa*, Thor., Borneo, p. 146 ; *id.* (3) : *furra*, n. sp., Pinang, pp. 319-322 ; *nebulosa*, n. sp., Pinang, pp. 322-325 ; *imbecilla*, n. n. for *debilis*, Thor., and *leptoscelis*, n. n. for *gracilipes*, Thor., p. 325 ; *id.* (4).

Palistes melanichnys, n. sp., Nias, pp. 53-56 ; *id.* (2) : *incanus*, n. sp., Borneo, p. 146 ; *id.* (3) : *höhneli*, n. sp., Kilimanjaro, p. 120 ; SIMON (2).

Sarotes acolastus, n. sp., Nias, pp. 56-60 ; THORELL (2) : *ferox*, Thor., loc. ?, p. 147 ; *id.* (3).

Holconia becarii, Thor., Sumatra, p. 147 ; *id.* (3).

Libania scabrieula, Thor., Java, n. var. *sulcata*, Sumatra ; *lævis*, Thor., Sumatra, p. 148 ; *annulata*, Thor. ; *armillata*, Thor., Sumatra, p. 149 ; *id.* (3).

Dolothymus pallidus, Thor., Sumatra, p. 150 ; *id.* (3).

Angæus rhombifer, Thor., Sumatra, p. 150 ; *id.* (3).

Theleticopsis modesta, n. sp., Pinang, pp. 329-332 ; *id.* (4).

THOMISIDÆ.

Camarius fornicatus, Thor., Sumatra, p. 60 ; THORELL (2).

Paradius callidus, n. sp., Nias, pp. 61-63 ; *id.* (2) : *javanus*, Thor., Java, p. 151 ; *perspicillatus*, Thor., Borneo, p. 152 ; *id.* (3).

Phrynarachne decipiens (Forbes), Nias, pp. 63 & 64 ; *id.* (2).

Musæus potitus, Thor., Sumatra, pp. 150 & 151 ; *id.* (3).

† *Tmarus eques*, Thor., Java, p. 151 ; *id.* (3) : *loriæ*, n. sp., Pinang, pp. 333-336 ; *id.* (4).

- Misumena dierythra*, Thor., Singapore, p. 152 ; *id.* (3).
Narceus picinus, Thor., Java, p. 152 ; *id.* (3).
Tharpyna varica, Thor., Java, p. 153 ; *id.* (3).
Hedana perspicax, Thor., Sumatra ; *ocellata*, Thor., Sumatra, Java, p. 153 ; *id.* (3).
Talaus elegans (Thor.), Sumatra ; *nanus* (Thor.), Java, p. 154 ; *id.* (3).
Zametopias speculator, Thor., Sumatra, p. 154 ; *id.* (3).
Palaphatus pseudorchestes, Thor., Sumatra, p. 155 ; *id.* (3).
Thomisus daradioides, n. sp., Djebel-Milhan, p. 106 ; *tetricus*, n. sp., Cheikh Othman, pp. 106 & 107 ; SIMON (1).
Xysticus helophilus, n. sp., Aden, p. 108 ; *id.* (1).
Thanatus plumosus, n. sp., Aden, p. 109 ; *id.* (1).
Stephanopis barbipes, n. sp., Cape York, pp. 254 & 255, pl. xxiii, fig. 6 ;
 KEYSERLING.
Dica insularis, n. sp., Oahu, pp. 261-263, pl. xxiv, fig. 3 ; *id.*

ARCYIDÆ,

- Arcys*, pp. 255 & 256 ; *cornutus*, L.K., Sydney, pp. 256 & 257, pl. xxiii, fig. 7 ; *alatus*, n. sp., Sydney, pp. 257 & 258 ; *lancearius*, W., pp. 258 & 259, Sydney, pl. xxiii, fig. 9 ; *clavatus*, n. sp., pp. 259-261, pl. xxiv, figs. 1 & 2 ; KEYSERLING.

OONOPIDÆ.

- Gamasomorpha hyperion*, n. sp., Aden, p. 88 ; SIMON (1).

CTENIDÆ,

- Acanthoctenus variatus*, n. sp., Nias, pp. 34-38 ; THORELL (2) : *dimicatus*, Thor., Sumatra, p. 134 ; *latus*, Thor., Borneo, pp. 134 & 135 ; *id.* (3).
Ctenus pulvinatus, Thor., Borneo, p. 133 ; *bicostatus*, Thor., Borneo, p. 134 ; *id.* (3) : *fungifer*, n. sp., Pinang, pp. 309-312 ; *id.* (4).

LYCOSIDÆ,

- Dolomedes lepidus*, Thor., Sumatra, p. 135 ; THORELL (3).
Trochosa inops, Thor., Sumatra, p. 135 ; *id.* (3).
Tarantula fragilis, Thor., Sumatra, p. 136 ; *id.* (3).
Pardosa marchei, n. sp., Guam, pp. 134 & 135 ; SIMON (3).
Lycosa sumatrana, Thor., p. 136 ; *pinangensis*, Thor., Pinang ; *vagula*, Thor., Sumatra, Java, p. 137 ; *rabulana*, Thor., Sumatra ; *iphnochora*, Thor., Sumatra, p. 138 ; THORELL (3) : *oahuensis*, n. sp., Oahu, pp. 267-269, pl. xxiv, fig. 8 ; KEYSERLING : *opifex*, n. sp., pp. 33-38, with figs. ; WAGNER (2).
Lycosella tenera, Thor., Sumatra, *bisulcata*, n. var., p. 139 ; *minuta*, Thor., Sumatra, pp. 139 & 140 ; THORELL (3).
Passiena spinicrus, Thor., Pinang, p. 140 ; *id.* (3).
Lysania, n. g., p. 312, type *pygmaea*, n. sp., Pinang, pp. 313-315 ; *id.* (4).

OXYOPIDÆ.

Oxyopes birmanicus, Thor., Nias, pp. 38 & 39; *javanus*, Thor., syn. *lineatipes*, Sim., Sumatra, p. 39; *auratus*, n. sp., Sumatra, pp. 39-42; *pupulus*, n. sp., Nias, pp. 42-44; THORELL (2): *javanus*, Thor., Java, Sumatra, &c., p. 140; *annulipes*, Thor., Sumatra; *providens*, Thor., Sumatra, p. 141; *setipes*, Thor., Borneo; (*Tapponia*) *obtusius*, Thor., Sumatra; *fronto*, Thor., Sumatra, p. 142; *latifrons*, Thor., Sumatra, p. 143; *id.* (3): *imbellis*, n. sp., Pinang, pp. 316-318; *id.* (4): *rutilius*, n. sp., Cheikh Othman, p. 114; *pigmentatus*, n. sp., Aden, pp. 114 & 115; SIMON (1).

Peucetius fusciventris, n. sp., Djebel-Milhan, p. 113; *id.* (1).

ATTIDÆ.

Synemosyna praelonga, n. sp., Nias, pp. 64-68; THORELL (2): *capito* (Thor.), loc. ?, pp. 155; *debilis*, Thor., Java, p. 155; *id.* (3).

Harmochirus nervosus, Thor., Sumatra, p. 68; *malaccensis*, Sim., pp. 68 & 69; *id.* (2).

Stichius, n. g., pp. 69 & 70, type *albomaculatus*, n. sp., Sumatra, pp. 70-73; *id.* (2).

Toxex mandibularis, Thor., loc. ?, p. 156; *id.* (3).

Pseudicius asoroticus, n. sp., Cheikh Othman, pp. 116 & 117; SIMON (1).

Mogrus precinctus, n. sp., Aden, pp. 117 & 118; *v-album*, n. sp., Aden, pp. 118 & 119; *id.* (1).

Phlegra chrysops, n. sp., Aden, p. 119; *id.* (1).

Heliophanus lucipeta, n. sp., Aden, pp. 119 & 120; *id.* (1).

Salticus formosus, Thor., Sumatra, p. 156; *pecterosus*, Thor., n. var. *sternodes*, Sumatra, p. 157; *alticeps*, Thor., Java, pp. 157 & 158; *leptognathus*, Thor., Java, p. 158; *id.* (3): *tristis*, Sim., Aden, pp. 115 & 116; *id.* (1).

Bianor balius, Thor., Nias, p. 73; THORELL (2); *leucostictus*, Thor., Sumatra, pp. 158 & 159; *incitatus*, Thor., Java, Sumatra, p. 159; *id.* (3).

Homalattus mordax, Thor., Java, p. 159; *nobilis*, Thor., Celebes, p. 160; *id.* (3).

Holoplatys planissima (Koch), n. var. *occidentalis*, Nias, p. 74; *id.* (2).

Marptusa nannodes, Thor., Sumatra, pp. 160 & 161; *id.* (3).

Bovia hians, Thor., Sumatra; *decorata*, Thor., Sumatra, p. 161; *id.* (3).

Thiania jucunda, n. sp., Nias, pp. 75-79; *demissa*, Thor., Sumatra, p. 79 (in note); *id.* (2): *formosissima*, Thor., Borneo, pp. 161 & 162; *sinuata*, n. sp., Pinang, pp. 336-340; *id.* (4).

Linus subvexus, n. sp., Nias, pp. 79-82; *id.* (2).

Chrysilla delicata, Thor., Sumatra, p. 162; *doriæ*, Thor., Sumatra, pp. 162 & 163; *id.* (3).

Sinnamora glaucochira, Thor., Sumatra, p. 163; *id.* (3).

Mævia alternans (C. Koch), Sumatra, p. 83; *id.* (2): *persecta*, n. sp., Pinang, pp. 340-343; *id.* (4): *gemmans*, Thor., Sumatra; *marxii*, Thor., Java, p. 163; *cypria*, Thor., Sumatra, p. 164; *id.* (3).

Cyrba algerina (Luc), syn. *Stasippus increnatus*, Thor., &c., Sumatra, pp. 83 & 84 ; *id.* (2).

Gelotia frenata, Thor., Sumatra, pp. 164 & 165 ; *bimaculata*, Thor., Borneo, p. 165 ; *id.* (3).

Cocalus rimipalpis, Thor., Sumatra, pp. 165 & 166 ; *id.* (3).

Euophrys giebeltii, Thor., Java, p. 166 ; *id.* (3) : *kulczynskii*, n. sp., Pinang, pp. 343-347 ; *id.* (4).

Orceria keyserlingii, Thor., Sumatra, pp. 166 & 167 ; *eucola*, Thor., Sumatra, p. 167 ; *id.* (3).

Plexippus gansapatus, Thor., Sumatra, pp. 167 & 168 ; *id.* (3).

Viciria terebrifera, Thor., Sumatra, p. 168 ; *id.* (3).

Bathippus macilentus, Thor., Sumatra, pp. 168 & 169 ; *id.* (3).

~*Echeclus*, n. g., p. 347, type *concinus*, n. sp., Pinang, pp. 348-352 ; *id.* (4).

Hasarius elisabethæ, n. sp., Sumatra, pp. 85-88 ; *sannio*, Thor., syn. *coronatus*, Sim., Sumatra, Pinang ; *id.* (2) : *scylax*, Thor., Sumatra ; *workmanni*, Thor., Sumatra, p. 169 ; *coprea*, Thor. ; *sobarus*, Thor., Sumatra, p. 170 ; *dispalans*, Thor., Java, p. 170 ; *mccookii*, Thor., Java, p. 171 ; *id.* (3).

Nicylla sundevallii, Thor., Sumatra, pp. 171 & 172 ; *id.* (3).

Ergane signata, n. sp., Oahu, pp. 263-265, pl. xxiv, fig. 5 ; KEYSERLING.

Menemerus albocinctus, n. sp., Nicobar, pp. 265-267, pl. xxiv, fig. 7 ; *id.*

HERSILIIDÆ.

Chalinura (Dalm.). syn. *Rhadine*, Sim., *sumatrana*, n. sp., Sumatra, pp. 319-322 ; THORELL (1).

Hersilia sumatrana, n. sp., Sumatra, pp. 8-11 ; *id.* (2).

DICTYNIDÆ.

√*Badumna*, n. g., pp. 322 & 323, *hirsuta*, n. sp., Java, pp. 323-327 ; *exilis*, n. sp., Java, pp. 327-330 ; THORELL (1).

Dictyna sexnotata, n. sp., Aden, p. 86 ; *suedicola*, n. sp., Aden, pp. 86 & 87 ; SIMON (1).

ZODARIIDÆ.

Storena melanognatha, Hass., Sumatra, pp. 320 & 321 ; *vittata*, n. sp., Sumatra, pp. 331-335 ; *sobria*, n. sp., Sumatra, pp. 335-337 ; *hilaris*, n. sp., Java, pp. 338-340 ; *procera*, n. sp., loc. ?, pp. 340-344 ; THORELL (1).

Zodarium acrium, n. sp., Aden, pp. 92 & 93 ; SIMON (1).

PRODIDOMIDÆ.

Prodidomus aurantiacus, n. sp., Aden, p. 89 ; *nigellus*, n. sp., Cheikh Othman, pp. 89-90 ; SIMON (1).

CYCA[O]IDÆ.

[New fam. for genus *Cycais* ; THORELL, pp. 344 & 345.]

DINOPIDÆ.

Dinopis spinosus, n. sp., Florida, pp. 341-343, pl. xi; MARX (2):
bubalus, n. sp., Kilimanjaro, pp. 126 & 127; SIMON (2).

DRASSIDÆ.

Œdignatha scrobiculata, Thor., Java?, pp. 345-349; THORELL (1).
Corinnomma mæreus, n. sp., Sumatra, pp. 349-352; *id.* (1).
Agræca inquinata, n. sp., Sumatra, pp. 352-355; *id.* (1).
Tephlea semilimbata, n. sp., Aden, pp. 91 & 92; SIMON (1).
Drassus brachytheles, n. sp., Sumatra, pp. 356-358; *russulus*, n. sp.,
 Java, pp. 308-362; THORELL (1).
Prothesima sarawakensis, n. sp., Sarawak, pp. 362-364; *id.* (1).
 √ *Astratea*, n. g., pp. 364 & 365, *insignis*, n. sp., Sumatra, pp. 365-368;
id. (1).
Eutittha, Thor., p. 368, *montana*, n. sp., Sumatra, pp. 368-372; *longipes*,
 n. sp., Sumatra, pp. 372-374; *id.* (1).
Clubiona melanosticta, n. sp., Sumatra, pp. 374-378; *versicolor*, n. sp.,
 Sumatra, pp. 378-380; *id.* (1).
Chiracanthium debile, n. sp., Aden, p. 111; SIMON (1).
Micaria todilla, Sim., Cheikh Othman, pp. 109 & 110; *troilulus*, n. sp.,
 Cheikh Othman, p. 110; *id.* (1).
Matidia tenera, n. sp., Sumatra, pp. 380-383, *id.* (1); *trinotata*, n. sp.,
 Pinang, pp. 288-290; *id.* (4).
 √ *Teutamus*, n. g., p. 280, type *politus*, n. sp., Pinang, pp. 281-284; *id.* (4).
 √ *Sphingius*, n. g., p. 284, type *thecatus*, n. sp., Pinang, pp. 285-288;
id. (4).

ZIMER[O]IDÆ.

[New fam., for *Zimiris*, Sim., pp. 383 & 384; THORELL (1).]
Zimiris mamillana, n. sp., loc. ?, pp. 384-387; *id.* (1).

DYSDERIDÆ.

Ariadne snellemani (Hass.), Sumatra, pp. 387-391; THORELL (1).
 √ *Imogala*, n. g., p. 269, *scarabæa*, n. sp., Sydney, pp. 270 & 271, pl. xxiv,
 fig. 9; KEYSERLING.
Xestaspis parmata, n. sp., Sumatra, pp. 391-394; THORELL (1).

THERAPHOSIDÆ.

Selenocosmia javanensis (Walck.), n. var. *sumatrana*, Sumatra, pp. 394-
 397; *doriae*, n. sp., Sarawak, pp. 397-399; THORELL (1).
 √ *Rhianus*, n. g., p. 276, type *atratus*, n. sp., Pinang, pp. 277-280; *id.* (4).
Avicularia holmbergii, n. sp., loc. ?, pp. 399-402; *id.* (1).
Idiops yemenensis, n. sp., Arabia, p. 83; SIMON (1): *compactus*, Gerst.,
 Mombassa, p. 126; *id.* (2).

- Chatopelma adenensis*, n. sp., Aden, p. 84 ; SIMON (1).
Pisenor höhneli, n. sp., Kilimanjaro, p. 125 : *id.* (2).
Conothele cambridgii, n. sp., Sumatra, pp. 402-406 ; THORELL (1).
Cyrttauchenius montanus, n. sp., Sumatra, pp. 406 & 407 ; *id.* (1).
Diplura maculata, n. sp., Java, pp. 409-414 ; *id.* (1).
Atypus javanus, n. sp., Java, pp. 413-416 ; *id.* (1).
Calommata sundaica (Dol.), Java, pp. 416-419 ; *id.* (1).

PEDIPALPI.

- Phryniscus telekii*, n. sp., E. Africa, p. 129 ; SIMON (2).
Thelyphonus brasiliensis, Koch, Brazil, pp. 512-515, pl. iii, fig. 7 ;
manillanus, Koch, syn. *philippensis*, Butl., Philippines, pp. 516-519, fig. 4 ;
amurensis, Tarn., Amur, pp. 519-523, fig. 3 ; *strachii*, Tarn., Philippines,
 pp. 523-526, fig. 5 ; *maximus*, Tarn., Brazil, pp. 526-529, fig. 6 ; *caudatus*
 (Linn.), Haiti, pp. 529-533 ; TARNANI.
Hypoctonus proboscideus (Butl.), Ceylon, pp. 533-536, fig. 9 ; *id.*

SCORPIONES.

- Lepreus*, Thor., p. 117, *carinatus*, n. sp., S. Africa, pp. 129 & 130, pl. xiv,
 fig. 3 ; *fischeri*, Karsch, n. var. *nigrimanus*, Mombassa, pp. 130 & 131, pl. xiv,
 fig. 2 ; Pocock (1).
Uroplectes, Pet., syn. *Tityus*, Thor., pp. 118 & 119, *insignis*, n. sp., Table
 Mnt., pp. 132-134, pl. xiii, fig. 4 ; *formosus*, n. sp., Natal, pp. 134 & 135,
 pl. xiii, fig. 3 ; *flavoviridis*, Pet., Lake Nyassa, p. 135, pl. xiv, fig. 5 ;
id. t. c.
Isometrus, Ehrb., syn. *Phassus*, Thor., and *Androcottus*, Karsch, pp.
 119 & 120 ; *id.* (1).
Isometroides, Keys., p. 120 ; *id.* (1).
Centrurus, Ehrb., syn. *Rhopalurus*, Thor., pp. 120 & 121 ; *id.* (1).
Butheolus, Sim., syn. *Orthodactylus*, Karsch, pp. 121 & 122 ; *melanurus*,
 Kessler, syn. *schneideri*, L. Koch, p. 121 ; Pocock (1).
Rhoptrurus, Karsch, syn. *Odonturus* and *Babycurus*, Karsch, p. 122 ;
kirki, n. sp., W. Africa, pp. 137 & 138, pl. xiv, fig. 1 ; *jacksoni*, n. sp.,
 Taveita (Kilima Njaro), pp. 138 & 139, pl. xiii, fig. 1 ; *baroni*, n. sp., Mada-
 gascar, pp. 140 & 141, p. xiii, fig. 2 ; *id.* (1).
Grosphus, Sim, to include *limbatus*, *piceus*, and *lobidens* (Pocock),
 p. 123 ; *id.* (1).
Parabuthus, n. subg. of *Buthus*, type *P. liosoma*, Ehrb., pp. 124 & 125 ;
id. (1).
Buthus, Leach, syn. *Androctonus* (*Leiurus*), Ehrb., pp. 125 & 126 ;
id. (1) : *martensii*, Karsch, syn. *grammurus*, Thor., Madras, pp. 236 &
 237 ; *id.* (2) : *eminii*, n. sp., Victoria Nyanza, pp. 98-100, pl. i, fig. 2 ;
id. (4).
Prionurus, Ehrb., syn. *Androctonus*, Thor., pp. 126 & 127 ; *id.* (1).
 Synopsis of the genera of *Buthidae*, with hypothetical pedigree, pp. 127
 & 128 ; *id.* (1).

Palamnceus liophysa, Thor., Nias, pp. 90-94, figs. 1-4 ; THORELL (2).

Scorpio swammerdami, Simon, syn. *asper*, Thor., *kochii*, Karsch, *lucidipes*, Simon, Madras, pp. 237-241 ; Pocock (2) : *viatoris*, n. sp., E. Africa, pp. 100 & 101, pl. i, fig. 1 ; *id.* (4).

Hormurus leviceps, n. sp., Madras, Anamallai Hills, pp. 242-244, pl. xii, fig. 1 ; Pocock (2).

↓ *Uromachus*, n. g., p. 250, *pictus*, n. sp., Silhet, pp. 250-252, pl. xi B, fig. 1 ; *id.* (3).

SOLPUGÆ.

Galeodes caspius, n. sp., Turcoman, p. 205 ; *lehmanni*, n. sp., Kasnowodsk, pp. 205 & 206 ; *ater*, n. sp., near Aschkabad, p. 206 ; *savignyi* (Sim.), Tschinas, &c., p. 206 ; *pallidus*, n. sp., Tiflis, pp. 206 & 207 ; BIRULA (1).

Karschia mastigophora, n. sp., Tiflis, Kars, pp. 207-209 ; *id.* (1).

PSEUDOSCORPIONES.

Cheiridium corticum, n. sp., Rio Apa, Resistencia, pp. 410 & 411, pl. xiii, fig. 1 ; BALZAN.

Chelifer persulcatus, n. sp., Aden, p. 120 ; SIMON (1) : *cervus*, n. sp., Matto-Grosso, pp. 412-414, pl. xiii, fig. 2 ; *argentinus*, Thor., Asuncion, &c., pp. 414 & 415, pl. xiii, fig. 3 ; *communis*, n. sp., Rio Apa, &c., pp. 416 & 417, pl. xiii, fig. 4 ; *nidificator*, n. sp., Asuncion, pp. 417 & 418, pl. xiii, fig. 5 ; *robustus*, n. sp., Matto-Grosso, pp. 418-420, pl. xiii, fig. 6 ; *brevifemoratus*, n. sp., Asuncion, pp. 420 & 421, pl. xiii, fig. 7 ; *crassimanus*, n. sp., Matto-Grosso, &c., pp. 421-423, pl. xiii, fig. 8 ; *rudis*, n. sp., Rio Apa, pp. 423 & 424, pl. xiii, fig. 9 ; *germainii*, n. sp., Matto-Grosso, pp. 424-426, pl. xiv, fig. 10 ; *exilimanus*, n. sp., Rio Apa, pp. 426 & 427, pl. xiv, fig. 11 ; *foliosus*, n. sp., Asuncion, pp. 427 & 428, pl. xiv, fig. 12 ; *segmentidentatus*, n. sp., Asuncion, pp. 429-431, pl. xv, fig. 13 ; *canestrinii*, n. sp., Resistencia, pp. 430 & 431, pl. xv, fig. 14 ; *rufus*, n. sp., Asuncion, pp. 431 & 432, pl. xv, fig. 15 ; *longichelifer*, n. sp., Asuncion, &c., pp. 433 & 434, pl. xv, fig. 16 ; BALZAN : *balzanii*, n. sp., Pinang, pp. 352-355 ; *lucens*, n. sp., Pinang, pp. 355-357 ; THORELL (4).

Olpium oxydactylum, n. sp., Rio Apa, pp. 435 & 436, pl. xvi, fig. 17 ; *ramicola*, n. sp., Asuncion, pp. 436 & 437, pl. xvi, fig. 18 ; *elegans*, n. sp., Rio Apa, pp. 437 & 438, pl. xvi, fig. 10 ; *crassichelatum*, n. sp., Matto-Grosso, p. 39, pl. xvi, fig. 20 ; *brevifemoratum*, n. sp., Rio Apa, p. 440, pl. xvi, fig. 21 ; BALZAN. *O. bi-impressum*, n. sp., Aden, p. 121 ; *arabicum*, n. sp., Aden, p. 121 ; SIMON (1).

Garypus cuyabanus, n. sp., Matto-Grosso, pp. 41 & 42, pl. xvi, fig. 22 ; BALZAN.

↓ *Ideoroncus*, n. g., p. 443, *pallidus*, n. sp., Rio Apa, pp. 444 & 445, pl. xvii, fig. 23 ; *id.*

Roncus chthoniiformis, n. sp., Resistencia, pp. 445 & 446, pl. xvii, fig. 24 ; *id.*

- Chthonius parvidentatus*, n. sp., Rio Apa, pp. 447 & 448, pl. xvii, fig. 25 ;
hirsutus, n. sp., Matto-Grosso, pp. 448 & 449, pl. xvii, fig. 26 ; *curvidig-*
tatus, n. sp., Rio Apa, pp. 449 & 450, pl. xvii, fig. 27 ; *id.*
 ✓ *Tridenchthonius*, n. g., p. 450, *parvulus*, n. sp., Rio Apa, pp. 450 & 451,
 pl. xvii, fig. 28 ; *id.*

OPILIONES.

- Gagrella niasensis*, n. sp., Nias, pp. 95-97 ; THORELL (2).
Oligolophus ohionensis, n. sp., Ohio, p. 1103, pl. xlii, figs. 1 & 2 ; *pictus*,
 Wood, fig. 3 ; WEED (1).
Phalangium nigrum, Say, is referable to the genus *Astrobonus*, described,
 pp. 684 & 685, pl. xxiv, figs. 1 & 2 ; *id.* (2).
Phalangium longipalpis, n. sp., Arkansas, pp. 783-785, pl. xxvii, figs. 1-
 3 ; *id.* (3).
Liobunum longipalpis, n. sp., Illinois, pp. 866 & 867, pl. xxix, fig. 1 ; *id.*
 (4).
 ✓ *Forbesium*, n. g., p. 915, *formosum* (Wood), pl. xxx, figs. 1 & 2 ; *hiemale*,
 n. sp., p. 916, pl. xxxi ; *id.* (5).
Biantes fuscipes, n. sp., Pinang, pp. 357-359 ; THORELL (4).
Epedanus pinangensis, n. sp., Pinang, pp. 359-363 ; *id.* (4).
 ✓ *Podoctis*, n. g., pp. 363 & 364, type *armatissimus*, n. sp., Pinang, pp.
 364-367 ; *id.* (4).
Bupares granulatus, n. sp., Pinang, pp. 368-371 ; *id.* (4).
 ✓ *Tithæus*, n. g., p. 371, type *lavigatus*, n. sp., Pinang, pp. 371-374 ; *id.*
 (4).
 ✓ *Babrius*, n. g., p. 98, type *murcidus*, n. sp., Nias, pp. 98-102 ; *id.* (2).
 ✓ *Oncopus feæ*, n. sp., Pinang, pp. 375-377 ; *id.* (4).
 ✓ *Gnomulus*, n. g., p. 378, type *rostratus*, n. sp., Pinang, pp. 378-381 ; *id.*
 (4).
 ✓ *Nothippus*, n. g., pp. 102 & 103, type *limbatus*, n. sp., pp. 103-106 ; *id.*
 (2).
 ✓ *Miopsalis*, n. g., p. 381, type *pulicaria*, n. sp., pp. 381-383, Pinang ;
id. (4).

PALÆONTOLOGY.

SCUDDER characterises the following Orders, Families, Genera, and
 Species:—

ANTHRACOMARTI, p. 444.

POLYCHERIDÆ, p. 444.

Polychera, p. 444, *punctulata*, Scud., p. 444, pl. xxxix, figs. 2 & 6.

ARCHITARBOIDÆ, p. 445.

- Geraphrynus*, p. 445, *carbonarius*, p. 446, pl. xl, figs. 1, 9, 10, 12.
 ✓ *Geratarbus*, n. g., p. 447, *lucœi*, n. sp., p. 448, pl. xl, fig. 11 ; *scabrum*,
 n. sp., p. 448, pl. xxxix, fig. 5.

- Architarbus*, p. 449, *elongatum*, n. sp., p. 449, pl. xl, fig. 4.
 * *Kustarachne*, n. g., p. 450, *tenuipes*, n. sp., p. 450, pl. xl, fig. 7.
Anthracomartus, p. 451, *trilobitus*, Scud., p. 451, pl. xxxix, figs. 7-10 ;
pustulatus, Scud., p. 452, pl. xl, figs. 5 & 8.

PEDIPALPI, p. 453.

GERALINURIDÆ, p. 453.

- † *Græophonus*, n. g., p. 453, *carbonarius*, Scud., p. 454, pl. xl, figs. 2, 3, 6.
Geralinura, pp. 454 & 455, *carbonaria*, Scud., p. 455, pl. xxxix, figs. 1-4.

ACARI.

BERLESE, A. *Acarî, Myriapoda, et Scorpiones hucusque in Italia repertæ.*
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- Damxus patelloides*, n. sp., Algiers, pp. 420 & 421, pl. xxxviii, fig. 3 ;
phalangioides, n. sp., Blidah, pp. 421 & 422, pl. xxxviii, fig. 1 ; *flagellifer*,
n. sp., Teniet-el-Ahd, p. 422, pl. xxxviii, fig. 2 ; *id.*
- Eremaus fimbriatus*, n. sp., Algiers, pp. 422 & 423, pl. xxxvii, fig. 6 ; *id.*
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HOPLOPIDÆ.

- Cæculus spatulifer*, n. sp., Algiers, pp. 423-425, pl. xxxvii, fig. 7 ;
MICHAEL.

TYROGLYPHIDÆ.

- Saproglyphus*, n. g., *neglectus*, n. sp., pt. lvii, No. 6 ; BERLESE.
- Histiogaster corticalis* (Mich.), Italy, pt. lvii, No. 7 ; *id.*
- ? *Michaelia* characterised, pt. lvii, No. 8 ; *id.*
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TROMBIDIIDÆ.

- Nanorchestes*, n. g., *amphibius*, n. sp., pp. 891 & 892 ; TOPSENT & TROUESSART.
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SARCOPTIDÆ.

↓ *Chirodiscus*, n. g., *amplexans*, n. sp., pp. 392-398; TROUESSART & NEUMANN.

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Atax procurrupes, n. sp., Guahyba, pp. 425 & 426; *perforatus*, n. sp., Guahyba, p. 426; *rugosus*, n. sp., Guahyba, p. 426; *jheringi*, n. sp., S. America, p. 427; KOENIKE (3): *aculeatus*, n. sp., Europe; *id.* (1): *ampullaria*, n. sp., Europe; *id.* (2).

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Phytoptus diversipunctatus, n. sp., p. 41, pl. i, figs. 1 & 2; *populi*, n. sp., pp. 43 & 44, pl. ii, figs. 3 & 4; *læwi*, n. sp., pp. 44-46, pl. i, figs. 3 & 4; *tiliæ*, n. sp., pp. 46 & 47, pl. ii, figs. 1 & 2; *fraxinicola*, n. sp., pp. 48-50, pl. iii, figs. 1 & 2; *pyri*, n. sp., pp. 50 & 51, pl. iv, figs. 1 & 2; *tristriatus*, n. sp., pp. 51-53, pl. v, figs. 3 & 4; *similis*, n. sp., pp. 53 & 54, pl. vi, figs. 2 & 3; *phlæocoptus*, n. sp., pp. 54 & 55, pl. vi, figs. 4 & 5; *padi*, n. sp., pp. 55-57, pl. v, fig. 5, pl. vi, fig. 1; *vitis*, Lard., pp. 57 & 58, pl. vii, figs. 1 & 2; *drabæ*, n. sp., pp. 58 & 59, pl. v, figs. 1 & 2; *ulmi*, n. sp., pp. 59 & 60, pl. vii, figs. 3 & 4; NALEPA (2): *hippocastanum*, n. sp., pp. 56-63, figs. 1-3; FOCKEU (1): *brevitarsus*, n. sp., p. 109, fig. 3; *nalepai*, n. sp., p. 112, fig. 5: *id.* (2).

Phyllocoptes minutus, n. sp., pp. 60 & 61, pl. iii, figs. 3 & 4; *galeatus*, n. sp., pp. 61 & 62, pl. i, figs. 5 & 6; *schlechtendali*, n. sp., pp. 62 & 63, pl. iv, figs. 3 & 4; *reticulatus*, n. sp., pp. 64 & 65, pl. iv, figs. 5 & 6; NALEPA (2).

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- Ebelia echinata*, n. var. *japonica*, Kadsiyama, pp. 164 & 165, fig. 6.
- Pallene longiceps*, Böhm., Kadsiyama, pp. 165 & 166, fig. 7.
- Phoxichilidium gestiens*, n. sp., Kadsiyama, p. 166, fig. 8.
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Proetus distinctus, p. 55, pl. vi, fig. 23.

Cyphaspis parvula, p. 57, pl. vi, fig. 25.

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Holometopus gracilis, p. 86, pl. v, fig. 8; *lævis*, fig. 9; *radiatus*, p. 87, pl. iv, fig. 16.

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MYRIOPODA.

BY

R. INNES POCOCK.

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LITHOBIIDÆ.

Lithobius fasciatus, Newp., syn. *grossipes*, C. Koch, Liguria, p. 61; *melanops*, Newp., syn. *glabratus*, C. Koch, Liguria, p. 62; *castaneus*, Newp., syn. *eximius*, Mein., Liguria, p. 63; *doriæ*, n. sp., Liguria, p. 63; POCOCK (1): *carinipes*, n. sp., California, p. 153, pl. v, fig. 31; *californicus*, n. sp., California, p. 153; DADAY: *leptopus*, Latz., Italy, pt. lvii, No. 2; *impressus*, C. Koch, Italy, Sardinia, No. 3; BERLESE.

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Cryptops anomolans, Newp., syn. *punctatus*, C. Koch, Liguria, p. 68; *id.* (1).

Scolopocryptops mexicanus, Humb. & Sauss., syn. *miersii*, Mein., *meinerti*, Pocock, Ecuador, pp. 142 & 143; *id.* (5).

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Polydesmus lauræ, n. sp., Busalla (Liguria), pp. 399 & 400; Pocock (3) : *græcus*, n. sp., Morea, p. 139, pl. v, fig. 24; *nanus*, C. Koch, Corfu, pp. 139 & 140, pl. v, fig. 21; *mediterraneus*, n. sp., Servia, p. 140, pl. v, figs. 25-27; DADAY.

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Paradoxosoma, n. g., p. 135, *granulatum*, n. sp., Corfu, p. 135, pl. v, figs. 19, 20, 22, & 23; *id.*

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Spirobolus noronhensis, n. sp., Fernando Noronha, pp. 528 & 529 ;
 Pocock (6) : *ferrugineus*, n. sp., Panama, p. 130 ; *hagedussii*, n. sp.,
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SCUDDER characterises the following Orders, Families, Genera, and Species :—

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✓ *Ilyodes*, n. g., p. 422, *divisa*, n. sp., pl. xxxviii, fig. 1 ; *elongata*, n. sp., p. 428, pl. xxviii, fig. 2.

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INSECTA.

BY D. SHARP.

THE number of titles is this year 927, as against 949 in 1889.

The classification of the Coleopterous family *Pselaphidæ* has been remodelled by RAFFRAY (631), who finds that we are acquainted at present with about 274 genera; 43 only being the number comprised in the Munich Catalogue of the year 1868. RAGONOT (634) has commenced the publication of a similar work on the *Pyralidæ*—a group of *Lepidoptera*, in which the increase of genera will apparently be equally great. BEAUREGARD has produced a comprehensive work on the *Cantharidæ* (37), treating of the anatomy, biology, and taxonomy of the group, and in fact wanting only the characters of the species to be a monograph of the family. In *Diptera*, the work of BRAUER & BERGENSTAMM (82) is noteworthy; in it some 50 families and about 130 new genera are proposed for a portion of the *Muscidæ acalyptrate*, and these chiefly European; the work being confined to the species extant in the Museum at Vienna.

We are indebted to the regretted E. T. ATKINSON for a complete catalogue (19) of the *Capsidæ* of the world, and to KIRBY (428) for a similar useful list of the *Odonata*.

MÜSCHLER (558) has published a descriptive list of the *Lepidoptera* of the Island of Portorico; a large proportion of the 622 species it includes being considered new.

SKUSE has not only continued the publication of his "*Diptera of Australia*" (791), but has also found a supplement (792) to the parts published during the last two or three years necessary. The *Insecta* in GODMAN & SALVIN'S *Biologia Centrali-Americana* (317) have made the usual amount of progress. OUDEMANS (586) has given us one of our first glimpses of the *Thysanura* of the tropics.

MEINERT (521) has described an apterous *Dipteron*, and LEON (481) an insect that he considers intermediate between *Diptera* and *Hemiptera*. LOWNE has commenced the publication of his monographic work (492) on *Calliphora erythrocephala*, and GRABER (321) has continued his researches in Insect embryology.

Another of the important volumes issued by the United States Entomological Commission has appeared during 1890; it is by PACKARD (588),

and gives a very large amount of information about the metamorphoses and habits of North American insects of various orders. The same author's paper (590) on the spines of *Lepidopterous* larvæ is of considerable interest.

WEINLAND's (899) memoir on the balancers of *Diptera* is of importance from an anatomical point of view, though it still leaves much doubt as to the function of the highly perfect structures he describes. CARLET (117) points out that in the *Hymenoptera* that merely paralyse their prey by stinging, both the sting and the poison are different from what they are in those that kill their prey.

SEITZ's sketches (765, 767) of *Lepidopterous* life in South America contain much suggestive matter.

SCUDDER has published an important work (754) on the Tertiary Fossil Insects of North America, describing a large number of new forms. He gives an account of the Insect remains found at Florissant; an extremely rich fauna must have existed there, no less than 50 species of ants having been already discovered at this spot. His large volume treats, however, of only a portion of the Insect remains that have been found at Florissant, the butterflies of the locality being dealt with in a separate paper (755). It should be noticed that this author attempts, for the first time, to determine the age of a deposit from the Insect remains contained in it.

It may be mentioned, as another point of interest in the extensive palæo-entomological portion of the record for this year, that BROGNIART (91) has called attention to the former existence of Insects with wing-like appendages on the prothorax.

The large number of new genera that have been proposed in Entomology during recent years being unaccompanied by any corresponding development of Catalogue work, it follows as a necessary consequence, that the systematic arrangement of genera in this record becomes more and more impracticable. In the present year the Recorder has adopted an alphabetical sequence for the genera of each group, in the hope that on the whole this will prove preferable to an imperfect systematic arrangement.

I.—TITLES.*

1. ABEILLE DE PERRIN, E. Études sur les *Malachides*. *Malachides* d'Europe et circa. *Malachides* d'Abyssinie. Rev. d'Ent. ix, pp. 35-55. [*Coleoptera*.]
2. ——. *Malachides* d'Europe et pays voisins. Ann. Soc. Ent. Fr. (6) x, pp. 181-260, 331-420, & 567-680. [*Coleoptera*.]
3. ——. Descriptions de deux nouvelles espèces de *Malachiides*. Ann. Mus. Genov. (2) ix, pp. 89 & 90. [*Coleoptera*.]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

4. AITKEN, E. H. Parasitic flies. J. Bomb. Soc. v, p. 420. [*Lepidoptera*.]
Relative to the spines of caterpillars as protection against parasites.
——. [See also DAVIDSON & AITKEN (162).]
5. ALLARD, E. Voyage de M. Ch. Alluaud dans le territoire d'Assinie. *Chrysomélides*. Ann. Soc. Ent. Fr. (6) x, p. 555–558. [*Coleoptera*.]
6. ———. Troisième note sur les *Galérucides*. C.R. Ent. Belg. 1890, pp. lxx–xciii. [*Coleoptera*.]
7. ALPHÉRAKY, S. De l'olfaction chez les *Lépidoptères*. Bull. Soc. Ent. Fr. 1890, pp. xcvi–c.
8. ANDRÉ, ED. Species des *Hyménoptères* d'Europe et d'Algérie. Fasc. 36 & 37.
Chiefly devoted to the continuation of the *Braconidæ* by Marshall.
9. ANDRÉ, ERN. Matériaux pour servir à la faune *Myrmécologique* de Sierra-Leone. Rev. d'Ent. ix, pp. 311–327. [*Hymenoptera*.]
10. APFELBECK, V. Ein neuer *Geotrupes* aus Bosnien. Soc. Ent. iv, p. 167. [*Coleoptera*.]
11. ARCULEO, E. La luce negli insetti. Nat. Sicil. x, pp. 40–62.
12. ASHMEAD, W. H. Descriptions of new *Ichneumonidæ* in the collection of the U. S. National Museum. P. U. S. Nat. Mus. xii, pp. 387–451. [*Hymenoptera*.]
13. ———. On the *Hymenoptera* of Colorado ; Descriptions of new species, Notes and a list of the species found in the State. Bulletin No. 1 of the Colorado Biological Association, pp. 1–47. Washington : 1890.
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15. ———. Remarks on the *Chalcid* genus *Halidea*. T. c. pp. 264 & 265. [*Hymenoptera*.]
16. ———. The Corn *Delphacid*, *Delphax maidis*. Psyche, v, pp. 321 & 322. [*Rhynchota*.]
17. ATKINSON, E. T. Catalogue of the *Insecta* of the Oriental Region. No. 1. Order *Coleoptera*. Family *Cicindelidæ*. J. A. S. B. lviii, Part II, Natural Science, Supp. pp. 1–24.
18. ———. Catalogue of the *Insecta* of the Oriental Region. No. 2. Order *Coleoptera*. Family *Carabidæ*. Op. cit. lix, Part II, Supp., pp. 1–126.
19. ———. Catalogue of the *Insecta*. Order *Rhynchota*. Family *Capsidæ*. Op. cit. lviii, Part II, Natural Science, Supp., pp. 25–199.
Includes the *Capsidæ* of the whole world.
20. ———. Index to the first five papers on Indian *Rhynchota*, completing the family *Pentatomidæ*. T. c. II, pp. 441–448.

21. [ATKINSON, E. T.] *Rhynchota*. Notes on Indian economic entomology. Ind. Mus. Notes, i, pp. 175-190.
22. AURIVILLIUS, C. Neue Käfer aus Afrika. Ent. Tidskr. xi, pp. 203-205. [*Coleoptera*.]
23. AUSTAUT, J. L. Notice sur deux *Smerinthus* nouveaux de la côte septentrionale de l'Afrique. Le Nat. xii, p. 190. [*Lepidoptera*.]
24. BALLOWITZ, E. Untersuchungen über die Struktur der Spermatozoen, zugleich ein Beitrag zur Lehre vom feineren Bau der kontraktile Elemente. Die Spermatozoen der Insekten. i. *Coleopteren*. Z. wiss. Zool. I, pp. 317-407, pls. xii-xv.

Gives the results of an examination of upwards of 100 species. Summary, J. R. Micr. Soc. 1891, p. 181.

25. BALLÉ, E. Catalogue descriptif des Galles observées aux environs de Vire (Calvados). Bull. Soc. Rouen, xxv, pp. 415-437.
26. BALLION, E. Einiges aus meinen Notizblättern. Soc. Ent. v, pp. 25, &c. [*Coleoptera*.]
27. BALY, J. S. On the South American species of *Diabrotica*. Part I. Tr. E. Soc. 1890, pp. 1-86. [*Coleoptera*.]

Deals with the 160 species that form the first section of the genus; those that have not been previously well described are characterised at full length. Some synonymy is given that is not reproduced in our pages.

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29. BASSETT, H. F. New species of North American *Cynipidae*. Tr. Am. Ent. Soc. xvii, pp. 59-92. [*Hymenoptera*.]
30. BATES, H. W. Additions to the *Cicindelidae* fauna of Mexico, with remarks on some of the previously-recorded species. Tr. E. Soc. 1890, pp. 493-510, pl. xvi. [*Coleoptera*.]
31. —. *Coleoptera* collected by Mr. Pratt on the Upper Yangtze and on the borders of Thibet. Ent. xxiii, pp. 209-213 & 244-247.
32. —. On some *Coleopterous* Insects collected by Mr. W. Bonny in the Aruwimi Valley. P. Z. S. 1890, pp. 479-492.
33. —. On some *Curabidae* from Burma collected by M. L. Fea. Ann. Mus. Genov. (2) vii, pp. 100-111. [*Coleoptera*.]
 —. [See also JAMESON (405).]
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36. [BAUDI, F.] Supplemento alla Rassegna dei *Milubridi* (*Bruchidi*). Nat. Sicil. ix, pp. 205-215. [*Coleoptera*.]
37. BEAUREGARD, H. Les Insectes Vésicants. Paris : 1890, 8vo, pp. xv & 554, pls. xix. [*Coleoptera*.]
 In five parts : 1, Anatomy ; 2, Physiology and Pharmacology ; 3, Zoology and Development ; 4, Classification ; 5, Catalogue of the species. The title page says there are thirty-four plates, but they are lettered only as nineteen ; fifteen, however, being of double size. BRAUER gives note in reference to this paper in Verh. z.-b. Wien, xl, pp. 276 & 278, on the number of stadia in metamorphosis, and on some personal points ; and is replied to by BEAUREGARD, in C.R. Soc. Biol. (9) ii, pp. 608-612.
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40. —. Einige Bemerkungen zu Herrn. J. M. F. Bigot's Classificirung der *Empiden*. T. c. pp. 32-35. [*Diptera*.]
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42. BEHR, H. H. Entomological Contributions. Proc. Cal. Ac. Sci. (2) ii, pp. 91-96. [*Lepidoptera*.]
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46. —. Nouvelle espèce paléarctique du genre *Coptosoma*, Lap. Rev. d'Ent. ix, p. 355. [*Rhynchota*.]
47. —. Deux *Reduviides* nouveaux paléarctiques. T. c. pp. 56 & 57. [*Rhynchota*.]
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 [See also TARGIONI-TOZZETTI (843).]
50. BETHAM, J. A. The Butterflies of the Central Provinces. J. Bomb. Soc. v, pp. 19-28, &c. [*Lepidoptera*.]
 Notes on collecting, &c., in India, with observations on mimicry, &c.

51. BEUTENMÜLLER, W. Descriptions of some new North American Moths. *Psyche*, v, pp. 299 & 300. [*Lepidoptera*.]
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55. BIGOT, J. M. F. *Diptères nouveaux ou peu connus*. 36^e partie. XLV. *Dolichopodi*. *Ann. Soc. Ent. Fr.* (6) x, pp. 261-296.
56. —. New species of Indian *Diptera*. *Ind. Mus. Notes*, i, pp. 191 & 192.
57. —. A new species of *Diptera* in the collections of the Indian Museum. *J. A. S. B.* lix, pt. 2, p. 265.
58. BLACKBURN, T. Revision of the genus *Heteronyx*, with descriptions of new species. Part IV. *P. Linn. Soc. N.S.W.* (2) iv, pp. 661-706. Part v. Appendix, *t. c.* pp. 1217-1246. [*Coleoptera*.]
59. —. Revision of the genera *Colpochila* (including *Haplonycha*), *Sericesthis*, and their allies, with descriptions of new species. Part I. *Op. cit.* v, pp. 517-552. [*Coleoptera*.]
60. —. Notes on Australian *Coleoptera*, with descriptions of new species. Part IV. *Op. cit.* iv, pp. 707-746. Part v, *t. c.* pp. 1247-1276.
61. —. Notes on Australian *Coleoptera*, with descriptions of new species. Part VI. *Op. cit.* v, pp. 147-155.
62. —. Notes on Australian *Coleoptera*, with descriptions of new species. Part VII. *T. c.* pp. 303-366.
63. —. Notes on Australian *Coleoptera*, with descriptions of new species. Part VIII. *T. c.* pp. 553-592.
64. —. Further notes on Australian *Coleoptera*, with descriptions of new species. VI. *Tr. R. Soc. S. Austr.* xii, pp. 132-148.
65. —. Further Notes on Australian *Coleoptera*, with descriptions of new genera and species. VII. *Op. cit.* xiii, pp. 82-93.
66. —. Further notes on Australian *Coleoptera*. VIII. *T. c.* pp. 121-160.
67. BLANC, L. Sur la Coloration de la Soie par les aliments. *C.R.* cxi, pp. 280 & 281.
68. BLATCH, W. G. A new species of *Neuraphes*. *Ent. M. M.* (2) i, p. 93. [*Coleoptera*.]

69. BLOOMFIELD, E. N. The *Lepidoptera* of Suffolk. St. Leonards-on-Sea: 1890, 60 pp.
70. BOLIVAR, J. Voyage de M. E. Simon au Venezuela. *Orthoptères*. Ann. Soc. Ent. Fr. (6) x, pp. 137-146.
71. —. *Ortópteros* de Africa del Museo de Lisboa. Continuacion. J. Sci. Lisb. (2) i, pp. 150-173 & 211-232.
72. —. Diagnosis de *Ortópteros* nuevos. An. Soc. Esp. xix, pp. 299-333, pl. i.
73. BONSDORFF, A. VON. Über die Ableitung der Sculpturverhältnisse bei den Deckflügeln der *Coleopteren*. Zool. Anz. xiii, pp. 342-346.
74. BORRIES, H. Om Hvepselarver som Ektoparasiter paa frit omstrefjende Edderkopper. Ent. Med. ii, pp. 151-161. [*Hymenoptera*.]
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81. —. Ueber die Festellung des Wohnthieres der *Hypoderma lineata*, Villers, durch Dr. Adam Handlirsch und andere Untersuchungen und Beobachtungen an *Oestridenten*. Nach hinterbliebenen Notizen und mit Beigabe einer kurzen Biographie. T. c. pp. 509-516, portrait.
82. BRAUER, F., & BERGENSTAMM, J. E. Die Zweiflügler des kaiserlichen Museums zu Wien. iv. Vorarbeiten zu einer Monographie der *Muscaria Schizometopa* (exclusive *Anthomyidæ*) Pars. i. Denk. Ak. Wien, lvi, pp. 69-180, pls. i-xi. [*Diptera*.]
This work is in tabular form, and proposes a large number of new groups and new genera; the plates are confined to figures of the head in profile. About 48 new species are diagnosed; a few genera are established without a described species. Noticed by MIK, Wien. ent. Z. ix, pp. 155 & 159; and WILLISTON, Ent. News, i, p. 77.
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84. BRENDDEL, E., & WICKHAM, H. F. The *Pselaphidæ* of North America. Bull. Lab. Iowa, i, pp. 216-304, pls. vi-ix, and ii, pp. 1-84, pls. x-xii. [*Coleoptera*.]
 36 genera and about 175 species are described herein.
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86. —. Ueber die Gattung *Granida* und Beschreibung einer neuen *Polyphylla*. Ent. Nachr. xvi, pp. 197-199. [*Coleoptera*.]
87. —. Diagnoses neuer *Melolonthiden* aus Ecuador und Madagascar. Soc. Ent. v, p. 34. [*Coleoptera*.]
88. —. Eine neue *Chrysomela* aus Italien, Ent. Nachr. xvi, p. 14. [*Chrysomela*.]
89. BRIDGMAN, J. B. Notes on *Hymenoptera* in the Neighbourhood of Norwich; and on the genus *Glypta*, Gr. Tr. Norf. Soc. v, pp. 61-72.
90. —. *Glypta cicatricosa*, *G. flavipes* ♀, and *G. rubicunda*, n. sp., new to Britain, Ent. M. M. (2) i, p. 208, [*Hymenoptera*.]
91. BROGNIART, C. Note sur quelques insectes fossiles du terrain houillier qui présentent au prothorax des appendices aliformes, Bull. Soc. Philom. (8) ii, pp. 154-159, pls. i & ii.
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93. —. Nouvelle espèce de *Leoustide*. T. c. p. clxxiii. [*Orthoptera*.]
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95. BROWN, T. Notes on a collection of *Pselaphidæ* from the neighbourhood of Clevedon, Southern Wairoa. Tr. N. Z. Inst. xxii, pp. 230-233. [*Coleoptera*.]
96. BROWNE, E. T. On *Smynthurus aquaticus*. J. Quek. Club (2) iv, pp. 62-64, pl. v.
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97. BRUNNER, C. v. WATTENWYL. Monographie der *Proscopiden*. Verh. z.-b. Wien, xl, pp. 87-124, pls. iii-v. [*Orthoptera*.]
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102. —. Notes on the Genus *Dyschorista*, Led., a small Group of Moths allied to *Orthosia*. Ann. N. H. (6) vi, pp. 96 & 97. [*Lepidoptera*.]
103. —. Notes made during the present year on the Acceptance or Rejection of Insects by Birds. T. c. pp. 324-327.
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105. BUYSSON, R. DU. Trois diagnoses inédites de *Chrysis*. T. c. pp. cxxxiii & cxxxiv. [*Hymenoptera*.]
— [See also MAGRETTI (504).]
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107. CALVERT, P. P. Notes on some North American *Odonata*, with descriptions of three new species. Tr. Am. Ent. Soc. xvii, pp. 33-40, pl. v.
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114. —. Note sur les *Élatérides* de Chota-Nagpore. T. c. p. cxlvi-clvi. [*Coleoptera*.]
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120. CARRIÈRE, J. Zur Embryonal-entwicklung der Mauerbiene *Chalicodoma muraria*, Fab. *Zool. Anz.* xiii, pp. 69-71. [*Hymenoptera.*]
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This relates chiefly to *Tenebrionida*, but some new Clavicorns and a dissertation on the classification of that group are included. A name is proposed for a Termitophilous species of *Thysanura*.
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124. —. Some remarks on the genus *Xylophilus*, with descriptions of two species from Japan. *Ent. M. M.* (2) i, pp. 264-269. [*Coleoptera.*]
125. —. On a new genus of *Anthicidae* from tropical South America. *T. c.* pp. 292 & 293. [*Coleoptera.*]
126. —. On a new species of *Tomoderus* from Japan. *T. c.* p. 325. [*Coleoptera.*]
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758. ——. Remains of *Coleoptera* in the Interglacial clays of Scarboro', Ontario. P. Bost. Soc. xxiv, pp. 467 & 468.

759. ——. Physiognomy of the American Tertiary *Hemiptera*. *T. c.* pp. 562–579.

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762. ——. Diary of a hibernating Butterfly. *T. c.* pp. 330–332. [*Lepidoptera*.]

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(f.) FRANCE [see also (a.), (b.), and (g.)].

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N. Africa: ANCEY, Soc. Ent. v, pp. 41, &c.; WASMANN (883).—Spain, MEDINA, Act. Soc. Esp. xix, pp. 105 & 106.—Mount Friuli, Italy, SENNA, Bull. Ent. Ital. xxii, pp. 93–107.

Coleoptera. ABEILLE (1); BRENSKE (85); BUYSSON (104); FAUST (242, 246); FAUVEL (250); FLACH (259); HALBHERR (345); QUEDENFELDT (628); REITTER (646, 654, 655, 661, 663, 667); SCHMIDT (741).—Nice, FAUVEL (25).—Corsica, REY (680).—Spain, SAINZ, Act. Soc. Esp. xix, pp. 107–110.—Malaga, MEDINA, Act. Soc. Esp. xix, p. 46.—Sicily, VITALE, Nat. Sicil. x, p. 31.—Italy: BRENSKE (88); REITTER (645).—Messina, VITALE (868).—Island of Lesina, REITTER (653).—Contribuzione alla fauna Trentina dei *Coleotteri*, BERTOLINI, Bull. Ent. Ital. xxi, pp. 157–205.—Bosnia, APFELBECK (10).—N. Africa: HEYDEN (358); WASMANN (885).—Algeria: BEDEL (41); ESCHERICH (233); PIC (606).—Tripolis, QUEDENFELDT (626).—Tunis, MAYET (519).—Egypt, GESTRO, Ann. Mus. Genov. (2) vii, pp. 14 & 15.—Asia Minor: HEYDEN (361); REITTER (660).—Palestine: GUILLEBEAU (333); PIC (607).

Hymenoptera. CAMERON (110); COSTA (147); SCHLETTERER (735).—Cordova, MEDINA, Act. Soc. Esp. xix, p. 114.—Italy, BERLESE (49).—Gibraltar and N. Africa, SAUNDERS (724).—N. Africa, FOREL (274).—Algeria, BUYSSON (105).—Ghadames, FOREL (276).—Syria, MAGRETTI (504).—Armenia, COSTA (147).—Ararat, RADOSZKOWSKI (630).

Lepidoptera. CONSTANT (140); HEYLAERTS (366); WALKER (873).—Sierra Nevada, VOIGT, S. E. Z. li, pp. 21–27.—Sicily: CALBERLA, Nat. Sicil. ix, pp. 42–49; RAGUSA, t. c. p. 87; FAILLA-TEDALDI (237).—Rome, CALBERLA, Deutsche e. Z., Lep. iii, pp. 47–94.—Aggiunte alla parte prima del saggio di un Catalogo dei Lepidotteri d'Italia, CURO, Bull. Ent. Ital. xxi, pp. 76–85.—Die Schmetterlinge des Lavantthales, viii Nachtrag. HÖFNER, JB. Mus. Kärnt. xxi, pp. 269–277.—N. Africa, AUSTAUT (23).—Algeria: MABILLE (500); RAGONOT (637); OBERTHUR (575).

Diptera. Italy: FICALBI (257); GIGLIO-TOS (304, 305, 306, 307).

Rhynchota. DOUGLAS (183); REUTER (671, 678).—Portugal (*Coccidæ*),

MORGAN (556).—N. Africa, BERGROTH (46) ; REUTER (675).—Asia Minor, REUTER (677).

Orthoptera. PANTEL (596).—Spain, MEDINA, Act. Soc. Esp. xix, pp. 14–17.—Egypt, KRAUSS (451).

(h.) *Caucasus and Western Asia* [see also (a.) and (b.)].

Insecta. Red Sea, WALKER, Ent. M. M. (2) i, pp. 258 & 284.

Coleoptera. Caucasus: EPPELSHEIM (226, 228) ; GANGLBAUER (296) ; REITTER (658, 662, 665, 666) ; STARCK (830).—West and Central Asia : BALLION (26) ; DOKHTOUROFF (181) ; ESCHERICH (232) ; HEYDEN (360) ; JAKOWLEFF (404) ; MORAWITZ (553) ; REITTER (644, 656) ; SCHMIDT (738) ; SEMENOW (770, 771) ; WEISE (900, 902) ; WILKINS (919).—Persia, WATERHOUSE (890).—Aden, LEFÈVRE (480).—Red Sea, GESTRO (300).—Island of Camaran, FAIRMAIRE (238).

Hymenoptera. Caucasus, SCHLETTERER (737).—Transcaspian region, MORAWITZ (555).—Tibet, MAYR (520).—Red Sea, *Formicidæ*, GESTRO, Ann. Mus. Genov. (2) vii, p. 10.

Lepidoptera. CHRISTOPH (132) ; ROMANOFF (712).

Rhynchota. BERGROTH (47) ; JAKOWLEFF (399, 400) ; REUTER (678).—Red Sea, LETHIERRY, Ann. Mus. Genov. (2) vii, p. 6.

4. AFRICA (ETHIOPIAN REGION).

For Arabia and Red Sea, see 3 (h.).

Insecta. JAMESON (405).

Coleoptera. ABEILLE, Abyssinia (1) ; ALLARD (5, 6) ; AURIVILLIUS (22) ; BATES (32) ; BRENSKE (85) ; CHAMPION (123) ; DOHRN, Congo. S. E. Z. li, p. 245 ; DUMONT (194) ; DUVIVIER (199, 200, 201) ; FAIRMAIRE (238) ; FAUST (248) ; GAHAN (290, 293) ; GESTRO, Assab (300) ; GROUVELLE (331) ; KERREMANS (420) ; KRAATZ (446, 447) ; KUWERT (465) ; LEFÈVRE (479) ; NICKERL (569) ; POLL (615, 617) ; QUEDENFELDT (624, 625) ; RITSEMA (698) ; SCHAUFUSS (729) ; SCHMIDT (740, 741) ; WATERHOUSE (888, 890, 892, 893) ; WESTWOOD (907).

Hymenoptera. ANDRÉ (9) ; EMERY (224) ; FOREL (275) ; HANDLIRSCH (349) ; KOHL (438) ; KRIECHBAUMER (452) ; MOCSÁRY (547) ; MEUNIER (530, 531).

Lepidoptera. CROWLEY (157) ; DRUCE (187) ; HEYLAERTS (366, 367) ; HOLLAND (372, 373) ; KIRBY (431, 432) ; MABILLE (496, 497, 498, 501) ; MABILLE & VUILLOT (502) ; RAGONOT (634) ; SHARPE (783, 784, 785, 786) ; SMITH (798, 799, 801) ; SMITH & KIRBY (802).

Isiptera. BIGOT (55) ; BRAUER & BERGENSTAMM (82).

Rhynchota. DISTANT (170, 175) ; KARSCH (409, 410).

Neuroptera. KARSCH (412, 414) ; SELYS (769).

Orthoptera. BOLIVAR (71, 72) ; COSTA (147) ; KARSCH (415, 416, 417, 418) ; KRAUSS (449).

5. MADAGASCAR.

Coleoptera. BRENSKE (87); DOHRN (178, 179, 180); FAIRMAIRE (239); FAUST (248); GAHAN (290, 294); GROUVELLE (327, 329); KUWERT (465); POLL (614); RAFFRAY (631); SCHAUFUSS (726).

Lepidoptera. CRQWLEY (157); MABILLE (497, 499); *id.*, Comoro Is. (496); OBERTHUR, Comoro Is. (575); RAGONOT (634).

Diptera. BRAUER & BERGENSTAMM (82).

Rhynchota. FALLOU (240); KARSCH (409, 410).

Neuroptera. KARSCH (415).

Orthoptera. BOLIVAR (72).

6. TROPICAL AND EASTERN ASIA, WITH JAPAN.

For Arabia and Red Sea, see 3 (h.).

Insecta. Eine entomologische Excursion auf Ceylon, SEITZ, Ent. Nachr. xvi, pp. 161-168.—Colombo, WALKER, Ent. M. M. (2) i, pp. 284-286.—I. of Jeretik, Port Wladimir, PFEFFER, JB. Hamb. vii, p. 96.

Coleoptera. ALLARD (6); ATKINSON, Catalogues of *Cicindelidae* and *Carabidae* of the Oriental region (17, 18), BALY (28), BATES (33); *id.*, China and Thibet (31), BOURGEOIS (77); BROGNIART, Laos (92); *id.*, Cochin China (94); CANDÈZE, India (114); CHAMPION, Japan (124, 126); DESBROCHERS, India (164); DUMONT, India (195); DUVIVIER, India (199); EPPELSHEIM, India (229), FAUST (247); *id.*, India (245); *id.*, China (244); *id.*, China and Mongolia (243); *id.*, S.-W. Siberia and Mongolia (241); FLEUTIAUX, India (267); FOWLER, Malacca (277); FRIVALDSZKY, N. China (285), GAHAN (293); *id.*, India and Ceylon (291); GANGLBAUER, China and Mongolia (297); GESTRO, Burma (301); GORHAM, India (318); GROUVELLE, Burma (326); JACOBY, Burma (394); *id.*, China (396); *id.*, China and Kashmir (397); JAKOWLEFF, China and Mongolia (401, 402); JANSON (407); KERREMANS, India (422); LÉVEILLÉ, Cochin China (484); LEWIS, Cochin China (486); NONFRIED (571, 572); *id.*, Kashmir and China (570); POLL, Himalaya (616), RAFFRAY (631), RITSEMA (700); ROELOFS, Perak (710); SCHMIDT, Japan (740), SEMENOW (770); SEVERIN, India (778); SHARP, Ceylon (779), WATERHOUSE (888, 891); WATERHOUSE, India (890); WEISE, China and Mongolia (900).

Hymenoptera. CAMERON (110, 111); EMERY, Burma (223); FOREL, India (275); MORAWITZ, China and Mongolia (554); RADOSZKOWSKI, Korea (629).

Lepidoptera. BETHAM, India (50); ELWES, India (218, 219); HEYLAERTS, India (362, 363); LEECH, China (477, 478); MANDERS, Shan States (505); *id.*, Mooltan, Ent. M. M. (2) i, pp. 14-17; MOORE, E. India (551, 552); NICÉVILLE, India (565, 566, 567); list of Chin-Lushai butterflies, NICÉVILLE, J. Bomb. Soc. v, pp. 295-298; second list of Chin-Lushai butterflies, *id. t. c.* pp. 382-388; OBERTHUR, Thibet (575);

RAGONOT (634, 638) ; SCHAUS, Assam (731) ; SEITZ, Hong-Kong (766) ; SNELLEN, Sikkim (818) ; SWINHOE, India (839, 840) ; *id.*, Burma (838) ; WATSON, Madras, J. A. S. B. lix, pt. 2, pp. 265-269 ; a preliminary list of the butterflies of Mysore, WATSON, J. Bomb. Soc. v, pp. 28-37.

Diptera. BIGOT (55, 56, 57) ; BRAUER & BERGENSTAMM (82).

Rhynchota. BERGROTH (45) ; DISTANT (171, 172, 173, 174) ; FALLOU (240) ; JAKOWLEFF (399, 403) ; LÉON (481) ; WESTWOOD (*Aphididae*), (908).

Neuroptera. India, WOOD-MASON (926).

Orthoptera. BOLIVAR, Japan (72) ; WOOD-MASON (924, 925).

7. ASIATIC ARCHIPELAGO, INCLUDING PAPUA.

Insecta. OLIVIER, TOSQUINET, ROBBE, Borneo and Sumatra, C.R. Ent. Belg. 1890, pp. xxx-xxxii.

Coleoptera. ALLARD (6) ; BOS, Java (75) ; BOURGEOIS (76) ; CANDÈZE, Borneo (113) ; *id.*, Java (116) ; DUVIVIER (197) and C.R. Ent. Belg. 1890, p. xcix ; *id.*, Philippines (199) ; *id.*, Borneo, C.R. Ent. Belg. 1890, pp. xx & xxi ; FAUST (247 & 248) ; FLACH, Sumatra (261) ; GAHAN, Borneo (293) ; *id.*, Nias I. (295) ; GESTRO, Sumatra and Nias (302) ; GORHAM, Sumatra (319) ; GROUVELLE, Sumatra (328) ; HEYLAERTS (365) ; JACOBY, Nias and Sumatra (395) ; KERREMANS, Borneo (420) ; KRAATZ, Java (444) ; *id.*, N. Guinea (443) ; KUWERT, Philippines (465) ; LEFÈVRE (479) ; POLL (612, 613) ; RICHTER (684, 685) ; RITSEMA (699, 701) ; *id.*, West Sumatra, Notes Leyd. Mus. xii, pp. 29-40 ; ROELOFS, Sumatra (710, 711) ; SENNA (774) ; SEVERIN (777) ; SLOANE, N. Guinea (796) ; WATERHOUSE (888) ; WEISE (901).

Hymenoptera. KOHL (438) ; MOCSÁRY (547).

Lepidoptera. HONRATH, Sumbawa (375) ; MARTIN, Sumatra (510) ; PAGENSTECHE, Java (593) ; *id.*, Palawan (594) ; SEMPER, Philippines (772) ; SNELLEN (822) ; *id.*, Java (819, 821) ; *id.*, Billiton (or Belitoeng) (824) ; *id.*, Tanah-Djampea, (820, 823) and Tijdschr. Ent. xxxiii, p. xxx ; WEYMER, Celebes (910).

Diptera. BIGOT (55).

Rhynchota. KARSCH, New Guinea (411).

Neuroptera. KIRBY (430) ; SELYS, *Odonata*, Sumatra (769) ; OUDEMANS, *Thysanura* (586).

Orthoptera. BOLIVAR (72) ; BROGNIART, Borneo (93) ; KARSCH (417).

8. AUSTRALIA AND TASMANIA.

Insecta. HELMS, Mount Kosciusko, Rec. Austr. Mus. i, pp. 11-16 ; KOEBELE (436) ; TEPPER, list of named insects in the South Australian Museum, Adelaide, series 1 & 2.

Coleoptera. ALLARD (6) ; BLACKBURN (58-66) ; BOURGEOIS (76) ; KERREMANS (421) ; KRAATZ (443) ; OLLIFF (579, 580, 583) ; SCHMIDT (740) ; SHARP (781) ; SLOANE (793, 794, 795).

Hymenoptera. FROGGATT (286, 287) ; KOHL (438) ; RILEY (692).

Lepidoptera. LUCAS (493, 494) ; MEYRICK (534, 535, 536) ; MISKIN (544, 545, 546) ; OLLIFF (581, 582, 584) ; SCOTT (753).

Diptera. BIGOT (55) ; BRAUER & BERGENSTAMM (82) ; SKUSE (791, 792).

Rhynchota. MASKELL, *Coccidæ* (513, 514).

Neuroptera. KARSCH, *Odonatu* (413).

Orthoptera. TEPPER (847).

9. NORTH AMERICA.

Insecta. COQUILLETT (145) ; GODMAN & SALVIN (317) ; MOFFAT, *Canad. Ent.* xxii, p. 60 ; PACKARD (588).—*Catalogue of the Insects of New Jersey, SMITH, *Rep. Geol. Trenton*, ii, *cf.* *Ins. Life*, iii, p. 133.—Madeleine Is., PROVANCHER (621).—Longport, N.J., HAMILTON, *Ent. News*, i, p. 142.—Colorado, COCKERELL, *Ent.* xxiii, p. 19 : and Notes on the insect fauna of high altitudes in Custer County, Colorado ; *Canad. Ent.* xxii, pp. 37-39, 55-60, & 76.—Fossil, SCUDDER (754-757).

Coleoptera. *Coleoptera* common to N. America and other countries, SCHWARZ (751).—BRENDEL & WICKHAM (84) ; CASEY (122) ; DIETZ (168) ; GAHAN (292) ; HAMILTON, *Ent. News*, i, p. 13 ; HORN (376, 377, 378, 379, 380), and *Ent. News*, i, pp. 9 & 53-55 ; RAFFRAY (631) ; RIVERS (704, 705) ; SCHMIDT (740) ; SCHWARZ, *P. E. Soc. Wash.* i, p. 267 ; WICKHAM (916).—A month on Vancouver Island ; *id.* *Canad. Ent.* xxii, pp. 169-172.—Oregon, *id.* *Ent. News*, i, pp. 33-35.—On the lists of *Coleoptera* published by the geological survey of Canada, 1842-1888 ; HARRINGTON, *Canad. Ent.* xxii, pp. 135-140. &c.—New Jersey, LIEBECK, *Ent. News*, i, p. 158.—New Mexico, WICKHAM, *Ent. News*, i, p. 89.—Synopsis of *Cerambycidae*, continued, LENG, *Ent. Am.* vi, p. 9, &c.

Hymenoptera. ASHMEAD (12, 13, 14, 15) ; BASSETT (29) ; COCKERELL, *Ent.* xxiii, p. 282 ; COOK (143) ; CRESSON & HAMILTON (347) ; FOX (279, 280) ; GILLETTE (308) ; HANDLIRSCH (349) ; HARRINGTON, *Canad. Ent.* xxii, p. 40 ; HOWARD (383, 384) ; KOHL (437, 438) ; KRIECHBAUMER (452) ; RILEY & HOWARD (695) ; ROBERTSON (706) ; *Tenthredinidæ* collected at Ottawa, HARRINGTON, *Canad. Ent.* xxii, pp. 23-25 ; WEED (895, 896).—New Jersey, FOX, *Ent. News*, i, pp. 83 & 84.—Florida, FOX, *Ent. News*, i, p. 93.

Lepidoptera. BEHR (42) ; BEUTENMULLER (51) ; BUTLER (102) ; DYAR (208), and *Ent. News*, i, p. 105 ; EDWARDS, H. (211) ; EDWARDS, W. H. (213, 214, 215) ; FRENCH (281, 282), and *Ent. News*, i, p. 153 ; FYLES (288) ; GUMPENBERG (336) ; *Phycitidæ*, HULST (389) ; MURTFELDT (561) ; NEUMOEGEN (562, 563) ; RAGONOT (634, 635), and *Ent. Am.* vi, p. 64 ; SKINNER (789, 790) ; SMITH (804-815) ; SMYTH, *Psyche*, v, p. 347 ; WALSINGHAM (876, 877).—The butterflies of Laggan, N.W.T. Account of certain species inhabiting the Rocky Mountains in latitude 51° 25', BEAN, *Canad. Ent.* xxii, pp. 94-99.—New Hampshire, SLOSSON, *Ent. News*, i, p. 17.—Nebraska, TAYLOR, *Am. Nat.* xxiii, pp. 1024-1030.—

Philadelphia, SKINNER, Ent. News, i, p. 19.—Florida, SLOSSON, Ent. News, i, pp. 81-83, 101, & 102.—Colorado, BRUCE, Canad. Ent. xxii, p. 67.—California, BEHRENS, Zoe, i, p. 60.—Yosemite, BEHR, Zoe, i, pp. 177-179.—Lower California, BEHR, Zoe, i, pp. 246 & 247.—GROTE, Check-list of *Cymatophoridae* and *Noctuidae* (325).—Revision of *Scopelosoma*, SMITH, Ent. Am. vi, pp. 146-153.

Diptera. BIGOT (55); BRAUER & BERGENSTAMM (82); COCKERELL (135, 136); COQUILLETT (146); GILLETTE (310); RÖDER (707); WHEELER (914).—Washington, TOWNSEND, P. E. Soc. Wash. i, p. 254.

Rhynchota. ASHMEAD (16); DUZEE (202, 203, 204, 205, 206); GILLETTE, Ent. News, i, p. 26; PROVANCHER (620); RILEY & HOWARD (696); SMITH (797); WOODWORTH (927).

Neuroptera. CALVERT (107), and Ent. News, i, pp. 73 & 74; HAGEN (339).—List of the *Odonata* taken at Manchester, WADSWORTH, Ent. News, i, pp. 36, 37, & 55-57.—Virginia, CALVERT, Ent. News, i, p. 22.

Orthoptera. GODING (315); SCUDDER (761).

10. CENTRAL AMERICA, INCLUDING MEXICO.

Insecta. GODMAN & SALVIN (317).

Coleoptera. BALLY (27); BATES (30); CANDÈZE (115); CASEY (122); CROISSANDEAU (155); DUGÈS (192, 193); KUWERT (465); LEVEILLÉ (485); NONFRIED (571, 572); SEVERIN (776); WATERHOUSE (889); WEISE (901).

Hymenoptera. BASSETT (29); CAMERON (110); EMERY (221, 225); HANDLIRSCH (349); HOWARD (385); KOHL (437, 438); MOCSÁRY (547).

Lepidoptera. DRUCE (184, 185); MÖSCHLER (558); NEUMOEGEN (562); RAGONOT (634); SCHAUS (730); WEYMER (909).

Diptera. BIGOT (55); BRAUER & BERGENSTAMM (82); GIGLIO-TOS (305, 307).

Rhynchota. BERGROTH, C.R. Ent. Belg. 1890, p. xviii; FALLOU (240); RILEY & HOWARD, *Coccidae* (696).

Neuroptera. Termites of Panama, DUDLEY (191).

Orthoptera. SCUDDER (761).

11. ANTILLES.

Coleoptera. ALLARD (6); GAHAN (292); RAFFRAY (633).

Hymenoptera. EMERY, St. Thomas (225); KOHL (438).

Lepidoptera. DRUCE (184); MÖSCHLER (558); NEUMOEGEN, Cuba (562).

Diptera. BIGOT (55); MIK (539).

Rhynchota. RILEY & HOWARD, *Coccidae* (696).

Orthoptera. BOLIVAR, Cuba (72).

12. SOUTH AMERICA.

Coleoptera. Baly (27); Belon (44); Brenske (87); Champion (125); Desbrochers (165); Duvivier (198, 199); Lebrun & Fairmaire, Patagonia (476); Faust (248); Gahan (292); Godman & Salvin (317); Grouvelle (330); Jacoby (398); Kuwert (465); Lameere (471, 472); Nevinson (564); Nonfried (571); Pelseeneer, C.R. Ent. Belg. 1890, pp. clxxiv-clxxvi; Quedenfeldt (627); Raffray (631, 632); Régimbart (643); Reitter & Croissandeau (670); Schmidt (739, 740); Senna (774); Wasmann (883, p. 302, 884); Waterhouse (891).

Hymenoptera. Cameron, Trinidad (112); Emery (221); Kohl (437, 438); Kriechbaumer (452); Meunier (529); Mocsáry (547); Schletterer (737).

Lepidoptera. Butler (102); Calvert, Chili (108); Dognin (177); Druce (184, 186, 188); Hahnel (343); Heylaerts (364); Mabilie, Patagonia (476); Möschler (558); Oberthur (576); Ragonot (634); Seitz (767); Sharpe (782); Weymer (909); Weymer & Maassen (911).

Diptera. Bigot (55); Brauer & Bergenstamm (82); Meinert (527).

Rhynchota. Falloù (240); Lethierry (483); Reuter (678).

Neuroptera. Karsch (412).

Orthoptera. Bolívar (70, 72); Brunner (97); Scudder (761).

PALÆO-ENTOMOLOGY.

[Cf. Brogniart (91), Etheridge & Olliff (234), Flach (260), Kirby (428), Klebs (435), Schaufuss (727, 728), Scudder (754, 755, 756, 757, 758, 759, 760).]

Notes on the fossil insects of Aix; Nicolas, C.R. Ass. sci. Fr. xviii, pp. 424-432.

Notes on Palæo-entomology during the last ten years; Scudder (760).

Account of the number of insects found in Amber; Klebs (435).

List of fossil *Odonata*; Kirby (428).

COLEOPTERA.

Carabidae.

Neothanes, n. g., near *Carabus*, for *Cychnus testus*, Sc., Scudder, p. 535, pl. vii, figs. 32, 39, n. sp.

Elaphrus irregularis, Clays of Ontario, Scudder, Tert. Ins. p. 534, pl. i, fig. 36, n. sp.

Loricera ? *lutosa*, Clays of Ontario, Scudder, Tert. Ins. p. 533, pl. i, fig. 32, n. sp.

Bembidium glaciatum, pl. i, fig. 40, *fragmentum*, fig. 45, Interglacial clays of Ontario, Scudder, Tert. Ins. p. 532, n. spp.

Patrobis gelatus, Interglacial clays of Ontario, Scudder, Tert. Ins. p. 530, pl. i, fig. 48, n. sp.

Pterostichus abrogatus, p. 525, pl. i, fig. 39, *dormitans*, figs. 49, 55, *destitutus*, fig. 44, p. 526, *fractus*, figs. 29 & 30, *destructus*, fig. 46, p. 527, Interglacial clays of Ontario, SCUDDER, Tert. Ins., n. spp.

Diplochila? *henshawi*, Florissant, SCUDDER, Tert. Ins. p. 523, pl. xxviii, fig. 9, n. sp.

Platynus casus, p. 519, pl. i, fig. 42, *hindei*, fig. 54, *halli*, fig. 41, p. 520, *dissipatus*, fig. 37, *desuetus*, figs. 43, 51, 58, p. 521, *harttii*, fig. 31, Interglacial clays of Ontario, *cæsus*, Wyoming, pl. vii, fig. 34, p. 522, SCUDDER, Tert. Ins., n. spp.

Hydrophilidæ.

Hydrobius confusus, Wyoming, SCUDDER, Tert. Ins. p. 511, pl. vii, fig. 25, n. sp.

Hydrochus amictus, Interglacial clays of Ontario, p. 515, pl. i, fig. 47, *relictus*, Wyoming, p. 516, pl. viii, fig. 11, SCUDDER, Tert. Ins., n. spp.

Helophorus rigescens, Interglacial clays of Ontario, SCUDDER, Tert. Ins. p. 516, pl. i, fig. 53, n. sp.

Staphylinidæ.

Homalota recisa, Wyoming, SCUDDER, Tert. Ins. p. 509, pl. viii, fig. 14, n. sp.

✓ *Staphylinites*, n. g., for *S. obsoletum*, Sc. ; SCUDDER, Tert. Ins. p. 510, pl. viii, fig. 32.

Quedius chamberlini, pl. xvi, fig. 8, *breweri*, fig. 4, Florissant, SCUDDER, p. 508, Tert. Ins., n. spp.

Lathrobium interglaciale, Interglacial clays of Ontario, SCUDDER, Tert. Ins. p. 506, pl. i, fig. 38, n. sp.

Oxyporus stiriacus, Interglacial clays of Ontario, SCUDDER, Tert. Ins. p. 505, pl. i, fig. 36, n. sp.

Bledius glaciatus, Interglacial clays of Ontario, SCUDDER, p. 505, pl. i, fig. 35, n. sp.

Pseudolesteva, n. g., for *P. insinuans*, n. sp., in Amber from the Baltic ; SCHAUFUSS, Ent. Nachr. xvi, p. 69.

Pselaphidæ.

✓ *Greys*, n. g., for *G. conciliator*, n. sp., in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxiii, p. 113.

Tychus radians, p. 114, *avus*, p. 116, in Amber from the Baltic, SCHAUFUSS, Tijdschr. Ent. xxxiii, n. spp.

Bryaxis glabrella, p. 117, *veterum*, p. 120, in Amber from the Baltic, SCHAUFUSS, Tijdschr. Ent. xxxiii, n. spp.

✓ *Barybaxis*, n. g., p. 121, for *B. lata*, n. sp., in Amber from the Baltic, p. 122, SCHAUFUSS, Tijdschr. Ent. xxxiii.

Bythinus tenuipes, p. 123, *foveopunctatus*, p. 124, *typicus*, p. 125, *caviceps*, p. 127, in Amber from the Baltic, SCHAUFUSS, Tijdschr. Ent. xxxiii, n. spp.

✓ *Monyx*, n. g., for *M. spiculatus*, n. sp., in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 129.

↓ *Deuterotyrus*, n. g., for *D. redivivus*, n. sp., in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 131.

✓ *Hagnometopias*, n. g., p. 133, for *H. pater*, n. sp., in Amber from the Baltic, p. 134 ; SCHAUFUSS, Tijdschr. Ent. xxxiii.

Batrisus pristinus, p. 134, *antiquus*, p. 136, in Amber from the Baltic, SCHAUFUSS, Tijdschr. Ent. xxxiii, n. spp.

✓ *Cymbalizon*, n. g., p. 137, for *C. tyroides*, n. sp., in Amber from the Baltic, p. 138 ; SCHAUFUSS, Tijdschr. Ent. xxxiii.

Tyrus electricus in Amber from the Baltic, SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 139, n. sp.

↓ *Otenistodes*, n. g., p. 141, for *C. claviger*, n. sp., in Amber from the Baltic, p. 142, pl. v, fig. 17 ; SCHAUFUSS, Tijdschr. Ent. xxxiii.

↓ *Dantiscanus*, n. g., p. 142, for *D. costalis*, n. sp., in Amber from the Baltic, p. 143 ; SCHAUFUSS, Tijdschr. Ent. xxxiii.

✓ *Pammiges*, n. g., for *P. spectrum*, n. sp., pl. v, fig. 19, in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 144.

✓ *Pantobatrisus*, n. g., for *P. cursor*, n. sp., in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 145.

✓ *Nugaculus*, n. g., p. 147, for *N. calcitrans*, n. sp., in Amber from the Baltic, p. 148 ; SCHAUFUSS, Tijdschr. Ent. xxxiii.

✓ *Nugator*, n. g., for *N. stricticollis*, n. sp., in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 149.

Euplectus lentiferus, p. 152, *quadrioveolatus*, p. 154, *mozarti*, p. 155, in Amber from the Baltic, SCHAUFUSS, Tijdschr. Ent. xxxiii, n. spp.

↓ *Hetereuplectus*, n. g., for *H. retrorsus*, n. sp., in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 156.

Faronus porrectus, tritomicrus, in Amber from the Baltic ; SCHAUFUSS, Tijdschr. Ent. xxxiii, p. 158.

Silphidæ.

Ptomascopus aveyronensis, Tertiary Beds in S. France, FLACH, Deutsche e. Z. 1890, p. 106, n. sp.

✓ *Palaosilpha*, n. g., p. 106, for *P. fraasii*, n. sp., Tertiary Beds in S. France, p. 107 ; FLACH, Deutsche e. Z. 1890.

Cucujidæ.

Parandrita vestita, Wyoming, SCUDDER, Tert. Ins. p. 501, pl. vii, fig. 41, n. sp.

Byrrhidæ.

Nosodendron tritavum, Wyoming, SCUDDER, Tert. Ins. p. 499, pl. vii, fig. 36, n. sp.

Scarabæidæ.

Ægialia rupta, Wyoming, SCUDDER, Tert. Ins. p. 489, pl. viii, fig. 19, n. sp.

Buprestidæ.

✓*Mesostigmodera*, n. g., for *M. typica*, n. sp., Lower Mesozoic of Australia; ETHERIDGE & OLLIFF, Mem. Geol. Surv. N.S.W., Pal. vii, p. 9, pl. ii, figs. 1-3.

Lampyridæ.

✓*Paleotylus*, n. g., for *L. problematicus*, n. sp., Upper Tertiary in Australia; ETHERIDGE & OLLIFF, Mem. Geol. Surv. N.S.W., Pal. vii, p. 11, pl. i, figs. 10-14.

Rhipidophoridæ.

Rhipiphorus geikiei, Florissant, SCUDDER, Tert. Ins. p. 482, pl. xxvii, fig. 1, n. sp.

Curculionidæ.

Anthonomus soporus, Wyoming, SCUDDER, Tert. Ins. p. 472, pl. viii, fig. 16, n. sp.

Listronotus muratus, Wyoming, SCUDDER, Tert. Ins. p. 474, pl. viii, fig. 23, n. sp.

Tunymecus seculorum, Wyoming, SCUDDER, Tert. Ins. p. 476, pl. viii, fig. 22, n. sp.

Sitones grandævus, Sc., referred to *Eugnamptus* and figured; SCUDDER, Tert. Ins. p. 481, pl. viii, fig. 20.

Scolytidæ.

Hylastes? squalidens, Interglacial clays of Toronto, SCUDDER, Tert. Ins. p. 468, pl. i, figs. 23-25, n. sp.

Anthotribidæ.

Choragus fictilis, Wyoming, SCUDDER, Tert. Ins. p. 465, pl. viii, fig. 9, n. sp.

Hormiscus partitus, Wyoming, SCUDDER, Tert. Ins. p. 467, pl. viii, fig. 17, n. sp.

Chrysomelidæ.

Donacia stiria, fig. 28, *pompatica*, figs. 33 & 34, Interglacial clays of Ontario, SCUDDER, Tert. Ins. p. 486, pl. i, n. spp.

HYMENOPTERA.

Aculeata.

Didineis solidescens, Wyoming, SCUDDER, Tert. Ins. p. 620, pl. x, fig. 30, n. sp.

Ichneumonidæ.

✓*Lithotorus*, n. g. *Ichneumonides*, for *L. cressoni*, n. sp., Wyoming, pl. x, fig. xxi; SCUDDER, p. 609, Tert. Ins.

Rhyssa juvenis, Wyoming, SCUDDER, Tert. Ins. p. 609, pl. x, fig. 19, n. sp.

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Glypta transversalis, Wyoming, SCUDDER, Tert. Ins. p. 613, pl. x, fig. 25, n. sp.

Eclytus lutatus, Wyoming, SCUDDER, Tert. Ins. p. 614, pl. x, fig. 24, n. sp.

Tenthredinidæ.

Taxonus nortoni, Wyoming, SCUDDER, Tert. Ins. p. 604, pl. x, figs. 26 & 27, n. sp.

LEPIDOPTERA.

Rhopalocera.

Prodryas persephone, Sc., figured and described ; SCUDDER, Rep. U. S. Geol. Surv. viii. pt. i, pp. 441-448, pl. lii, figs. 1-10.

√ *Jupiteria*, n. g. near *Junonia*, p. 448, for *J. charon*, n. sp., Tertiary deposits of Florissant, p. 450, pl. lii, figs. 14 & 15 ; SCUDDER, Rep. U. S. Geol. Surv. viii, pt. i.

† *Lithopsyche*, n. g. near *Hypanartia*, p. 452, for *L. styx*, n. sp., Tertiary deposits of Florissant, p. 454, pl. lii, figs. 11, 16, & 17 ; SCUDDER, Rep. U. S. Geol. Surv. viii, pt. 1.

√ *Nymphalites*, n. g. *Nymphalidæ*, for *N. obscurum*, n. sp., Tertiary deposits of Florissant ; SCUDDER, p. 457, pl. liii, figs. 10-13, Rep. U. S. Geol. Surv. viii, pt. i.

√ *Apanthesis*, n. g. near *Anelia*, p. 459, for *A. leuce*, n. sp., Tertiary deposits of Florissant, p. 461, pl. lii, figs. 12 & 13 ; SCUDDER, Rep. U. S. Geol. Surv. viii, pt. 1.

√ *Prolibythea*, n. g., p. 461, for *P. vagabunda*, n. sp., Tertiary deposits of Florissant, p. 465, pl. liii, figs. 4-9 ; SCUDDER, Rep. U. S. Geol. Surv. viii, pt. i.

† *Stolopsyche*, n. g. (*Pieridi*), p. 467, for *S. libytheoides*, n. sp., Tertiary deposits of Florissant, p. 468, pl. liii, figs. 1-3 ; SCUDDER, Rep. U. S. Geol. Surv. viii, pt. i.

Tineidæ.

Psecadia mortuella, Florissant, SCUDDER, Tert. Ins. p. 603, pl. xv, figs. 12 & 17, n. sp.

DIPTERA.

Sciophila hyattii, Wyoming, SCUDDER, Tert. Ins. p. 597, pl. x, fig. 6, n. sp.

Anaclinia, sp. ? , figured and noticed ; SCUDDER, Tert. Ins. p. 597, pl. ix, fig. 12.

Boletina umbratica, p. 593, pl. x, fig. 3, *puludivaga*, fig. 7, p. 594, Wyoming, SCUDDER, Tert. Ins., n. spp.

Rymosia strangulata, Wyoming, SCUDDER, Tert. Ins. p. 590, pl. x, fig. 2, n. sp.

Anatella tacita, Wyoming, SCUDDER, Tert. Ins. p. 589, pl. x, fig. 13, n. sp.

Sciara scopuli, Wyoming, SCUDDER, Tert. Ins. p. 588, pl. x, fig. 16, n. sp.

Plecia pealei, shales at Twin Creek, p. 585, pl. iv, figs. 2, 3, 10, 11, & 12, *dejecta*, Wyoming, p. 586, pl. x, fig. 17, SCUDDER, Tert. Ins. n. spp.

Culex damnatorum, Wyoming, SCUDDER, Tert. Ins. p. 582, pl. x, fig. 14, n. sp.

Chironomus septus, Wyoming, SCUDDER, p. 578, pl. x, fig. 8, Tert. Ins.; *C. venerabilis*, Tertiary formations in Australia, ETHERIDGE & OLLIFF, Mem. Geol. Surv. N. S. W., Pal. vii, p. 7, pl. i, fig. 2: n. spp.

Tipula spoliata, p. 577, pl. x, fig. 4, *sepulchri*, fig. 1, & p. 578, Wyoming, SCUDDER, Tert. Ins., n. spp.

✓ *Lithophysa*, n. g. *Beridina*, *Stratiomyiidae*, for *L. tumulta*, n. sp., Wyoming, pl. ix, fig. 31; SCUDDER, p. 566, Tert. Ins.

✓ *Asarcomyia*, n. g. *Beridina*, for *A. cadaver*, n. sp., Wyoming; SCUDDER, p. 567, pl. ix, fig. 17, Tert. Ins.

Psilota tabidosa, Wyoming, SCUDDER, Tert. Ins. p. 561, pl. ix, fig. 9, n. sp.

RHYNCHOTA.

Statistics, generalisations, and comparisons as to the N. American and European Tertiary *Hemiptera*; SCUDDER (759).

Pentatomidæ.

✓ *Stenopelta*, n. g. *Cydnida*, for *Æthus punctulatus*, Sc.; SCUDDER, Tert. Ins. p. 437.

✓ *Procydnus*, n. g. *Cydnida*, p. 438, for the following n. spp. from Florissant: *pronus*, p. 439, pl. xxviii, fig. 5, *devictus*, fig. 4, *divexus*, p. 440, *quietus*, *reliquus*, p. 441, *vesperus*, fig. 15, *eatoni*, p. 442; SCUDDER, Tert. Ins.

✓ *Nerocydnus*, n. g. *Cydnida*, p. 443, for the following n. spp.: *vulcanius*, Florissant, p. 444, *gosiutensis*, Wyoming, pl. vii, fig. 22, *torpens*, p. 445, *stygius*, *amyzonus*, pl. xxviii, fig. 16, p. 446, *senior*, *solidatus*, pl. xxviii, fig. 13, p. 447, *revectus*, p. 448, Florissant; SCUDDER, Tert. Ins.

✓ *Thlibomenus*, n. g. *Cydnida*, p. 448, for *T. petreus*, *parvus*, pl. xix, fig. 23, p. 449, *perennatus*, *limosus*, pl. xxviii, fig. 12, p. 450, *macer*, p. 451, n. spp., Florissant; SCUDDER, Tert. Ins.

✓ *Discostoma*, n. n. for *Lobostoma*, Am.-Serv., with figure of a fossil species, pl. xxii, fig. 6; SCUDDER, Tert. Ins.

✓ *Teleschistus*, n. g. *Pentatomida*, p. 454, for *T. rigoratus*, pl. xxviii, fig. 14, p. 456, *placatus*, fig. 3, p. 457, n. spp., Florissant, and *Euschistus antiquus*, Sc., which is figured pl. ii, figs. 17-19; SCUDDER, Tert. Ins.

✓ *Thnetoschistus*, n. g. *Pentatomida*, p. 457, for *T. revulsus*, n. sp., Florissant, pl. xxviii, fig. 6, p. 458; SCUDDER, Tert. Ins.

✓ *Poteschistus*, n. g. *Pentatomida*, for *P. obnubilus*, n. sp., Florissant, pl. xxviii, fig. 18, SCUDDER, Tert. Ins. p. 458.

✓ *Cacoschistus*, n. g. *Pentatomida*, for *C. maceratus*, pl. xxviii, fig. 2, n. sp., Florissant; SCUDDER, Tert. Ins. p. 459.

✓ *Mateoschistus*, n. g. *Pentatomida*, p. 459, for *M. limigenus*, n. sp., Florissant, p. 460; SCUDDER, Tert. Ins.

✓ *Polioschistus*, n. g. *Pentatomida*, p. 460, for *P. ligatus*, pl. xxviii, fig. 7, *lapidarius*, fig. 10, n. spp., Florissant, p. 461; SCUDDER, Tert. Ins.

✓ *Pentatomites*, n. g. *Pentatomida*, p. 461, for *P. foliarum*, n. sp., Florissant, pl. xxviii, fig. 1, p. 462; SCUDDER, Tert. Ins.

✓ *Tiroschistus*, n. g. *Pentatomida*, p. 462, for *T. indurescens*, n. sp., Florissant, pl. xxii, fig. 4, p. 463; SCUDDER, Tert. Ins.

✓ *Thlimmoschistus*, n. g. *Pentatomida*, for *T. gravidatus*, n. sp., Florissant, pl. xxviii, figs. 11 & 19, p. 463; SCUDDER, Tert. Ins.

Mecocephala, sp. from Florissant, head figured, pl. xxviii, fig. 8; SCUDDER, Tert. Ins.

Coreidæ.

Anasa priscoputida, p. 412, pl. xxiv, fig. 4, Florissant, SCUDDER, Tert. Ins. p. 412, n. sp.

✓ *Achrestocoris*, n. g. *Coreina*, for *A. cinerarius*, n. sp., Florissant, pl. xxii, fig. 1; SCUDDER, Tert. Ins. p. 413.

✓ *Phthinocoris*, n. g. *Coreina*, for *P. colligatus*, pl. xxii, fig. 3, p. 414, *lethargicus*, pl. xxvi, fig. 17, & pl. xxvii, fig. 17, *languidus*, pl. xxvii, fig. 6, p. 415, *petræus*, p. 416, Florissant; SCUDDER, Tert. Ins.

✓ *Piezocoris*, n. g. *Coreina*, p. 416, for *P. peritus*, pl. xxv, fig. 15, *compactilis*, *P. ? peremptus*, pl. xxvi, fig. 14, p. 417, n. spp., Florissant; SCUDDER, Tert. Ins.

✓ *Cacalydus*, n. g. *Alydinæ*, for *C. lapsus*, pl. xxv, fig. 12, p. 419, *extirpatus*, fig. 3, p. 420, n. spp.; SCUDDER, Tert. Ins.

Cydamus robustus, Florissant, p. 420, pl. xxvi, fig. 3, SCUDDER, Tert. Ins., n. sp.

✓ *Parodarmistus*, n. g. *Alydinæ*, p. 421, for the following n. spp. from Florissant: *abscissus*, *caducus*, *collisus*, pl. xxv, fig. 13, p. 422, *defectus*, *exanimatus*, p. 423, *inhibitus*, p. 424; SCUDDER, Tert. Ins.

Protenor imbecillis, Florissant, SCUDDER, Tert. Ins. p. 424, pl. xxvi, fig. 8, n. sp.

✓ *Tenor*, n. g. *Coreidæ*, for *T. speluncæ*, n. sp., Florissant; SCUDDER, Tert. Ins. p. 425.

✓ *Etiocoris*, n. g. *Coreidæ*, p. 425, for *E. infernalis*, n. sp., Florissant, p. 426, pl. xxvi, fig. 16; SCUDDER, Tert. Ins.

✓ *Rhepocoris*, n. g. *Coreidæ*, p. 426, for the following n. spp. from Florissant: *prætectus*, *macrescens*, *prævalens*, pl. xxv, figs. 4, 6, 7, 9, 10, 11, 14, & 16, & pl. xxvi, fig. 11, p. 427, *propinquans*, pl. xxv, fig. 1, & pl. xxvi, fig. 13, p. 428, *minima*, p. 429; SCUDDER, Tert. Ins.

✓ *Orthriocorisa*, n. g. *Coreidæ*, p. 429, for *O. longipes*, n. sp., Florissant, p. 430, pl. xxvi, fig. 1; SCUDDER, Tert. Ins.

✓ *Heeria*, n. g. *Pseudophlæina*, p. 430, for *H. gulosa*, pl. xxvii, figs. 5, 12, & 18, & pl. xxviii, fig. 17, p. 431, *lpidosa*, pl. xxvii, figs. 3 & 19, *fedu*, p. 432, n. spp., Florissant; SCUDDER, Tert. Ins.

Corizus celatus, pl. xxvii, fig. 15, *abditivus*, pl. xxv, fig. 5, & pl. xxvi, fig. 4, p. 433, *somnurnus*, p. 434, Florissant, SCUDDER, Tert. Ins., n. spp.

Pyrrhocoridae.

Dysdercus cinctus, pl. xxiv, figs. 11, 13, & 14, *unicolor*, Florissant, SCUDDER, Tert. Ins. p. 410, n. spp.

Lygaeidae.

Lygeus stabilitus, p. 376, pl. xxii, fig. 10, & pl. xxiv, fig. 16, *obsolescens*, pl. xxiv, fig. 15, *fæculentus*, p. 377, Florissant, SCUDDER, Tert. Ins., n. spp.

Nysius vinctus, *vecula*, pl. xxii, fig. 7, p. 378, *tritius*, pl. xxiii, fig. 20, *terræ*, fig. 31, p. 379, *stratus*, pl. xxiii, figs. 14 & 27, & pl. xxv, figs. 2 & 8, Florissant, SCUDDER, Tert. Ins., n. spp.

Geocoris infernorum, Florissant, SCUDDER, p. 381, pl. xxiii, figs. 17 & 26, n. sp.

✓ *Procrophius*, n. g. *Oxycarenina*, p. 381, for *P. communis*, pl. xxiii, figs. 12, 18, 28, & 29, & pl. xxiv, fig. 1, *costalis*, pl. xxiii, fig. 8, p. 382, *languens*, p. 383, pl. xxiii, fig. 23, n. spp., Florissant ; SCUDDER, Tert. Ins.

Ligyrocoris exsuctus, Florissant, SCUDDER, p. 385, pl. xxiv, fig. 5, Tert. Ins., n. sp.

✓ *Stenopamera*, n. g. *Myodocharia*, *Lygaeidae*, p. 385, for *S. tenebrosa*, pl. xxiii, figs. 16 & 24, *subterrea*, fig. 7, n. spp., Florissant, p. 386 ; SCUDDER, Tert. Ins.

✓ *Catopamera*, n. g. *Myodocharia*, *Lygaeidae*, for *C. augheyi*, pl. xxvii, fig. 7, *bradleyi*, pl. xxvi, fig. 12, n. spp., Florissant ; SCUDDER, p. 387, Tert. Ins.

✓ *Phrudopamera*, n. g. *Myodocharia*, *Lygaeidae*, for *P. wilsoni*, pl. xxvii, figs. 9 & 16, p. 388, *chittendeni*, pl. xxvi, figs. 7 & 9, p. 389, n. spp., Florissant ; SCUDDER, Tert. Ins.

✓ *Lithocoris*, n. g. *Myodocharia*, *Lygaeidae*, for *L. evulsus*, n. sp., Florissant, p. 391 ; SCUDDER, Tert. Ins.

✓ *Cophocoris*, n. g. *Myodocharia*, *Lygaeidae*, for *C. tenebricosus*, n. sp., Florissant ; SCUDDER, Tert. Ins. p. 391.

✓ *Eucorites*, n. g. *Myodocharia*, *Lygaeidae*, for *E. serescens*, n. sp., Florissant ; SCUDDER, Tert. Ins. p. 392.

✓ *Procoris*, n. g., p. 392, *Myodocharia*, *Lygaeidae*, for *P. sanctæjohannis*, *bechleri*, pl. xxvii, fig. 4, n. spp., Florissant, p. 393 ; SCUDDER, Tert. Ins.

✓ *Ctereacoris*, n. g. *Myodocharia*, *Lygaeidae*, for *C. primigenus*, n. sp., Florissant ; SCUDDER, Tert. Ins. p. 394.

Trapezonotus exterminatus, p. 395, pl. xxii, fig. 9, & pl. xxiii, figs. 11, 22, & 25, *stygialis*, pl. xxvii, fig. 11, p. 396 ; SCUDDER, Tert. Ins.

✓ *Linnæa*, n. g. *Rhypparochromaria*, p. 396, for the following n. spp. from Florissant : *holmesii*, pl. xxiii, fig. 10, *putnami*, fig. 4, p. 397, *abolita*, *carcerata*, pl. xxiii, fig. 2, p. 398, *evoluta*, fig. 21, *gravida*, fig. 19, p. 39 ; SCUDDER, Tert. Ins.

Rhyparochromus verrillii, Florissant, SCUDDER, p. 400, pl. xxiii, figs. 15 & 30, Tert. Ins., n. sp.

↓ *Tiromerus*, n. g. *Rhyparochromaria*, *Lygaeidae*, p. 401, for *T. torpefactus*, *tabifluus*, n. spp., Florissant, p. 402 ; SCUDDER, Tert. Ins.

↓ *Lithochromus*, n. g. *Rhyparochromaria*, *Lygaeidae*, p. 402, for *L. gardneri*, pl. xxvi, fig. 10, & pl. xxvii, fig. 8, *obstrictus*, p. 403, *mortuarius*, pl. xxvi, fig. 2, *extraneus*, fig. 6, p. 404, n. spp., Florissant ; SCUDDER, Tert. Ins.

↓ *Coptochromus*, n. g. *Rhyparochromaria*, *Lygaeidae*, for *C. manium*, n. sp., Florissant ; SCUDDER, Tert. Ins. p. 405.

↓ *Prolygæus*, n. g. *Rhyparochromaria*, *Lygaeidae*, p. 405, for *P. inundatus*, n. sp., Florissant, p. 406, pl. xxvii, fig. 13 ; SCUDDER, Tert. Ins.

↓ *Necrochromus*, n. g. *Rhyparochromaria*, *Lygaeidae*, p. 406, for *N. cockerelli*, pl. xxvii, fig. 10, *labatus*, fig. 14, *saxificus*, n. spp., Florissant, p. 407 ; SCUDDER, Tert. Ins.

↓ *Exitelus*, n. g. *Rhyparochromaria*, *Lygaeidae*, for *E. exsanguis*, n. sp., Florissant, pl. xxvii, fig. 2 ; SCUDDER, Tert. Ins. p. 408.

↓ *Cryptochromus*, n. g. *Rhyparochromaria*, *Lygaeidae*, for *C. lætatus*, n. sp., Florissant ; SCUDDER, Tert. Ins. p. 409.

Capsidae.

Closterocoris elegans, Florissant, SCUDDER, Tert. Ins. p. 363, pl. xxiv, fig. 7, n. sp.

Carmelus gravatus, fig. 10, *sepositus*, fig. 6, Florissant, SCUDDER, Tert. Ins. p. 364, pl. xxiv, n. spp.

Fuscus? *fecatus*, Florissant, SCUDDER, Tert. Ins. p. 365, pl. xxii, fig. 5, n. sp.

Pæcilocapsus fremontii, p. 365, pl. xxiv, fig. 3, *veterandus*, fig. 9, p. 366, *eternus*, *tabidus*, p. 367, fig. 8, *ostentus*, p. 368, fig. 2, Florissant, SCUDDER, Tert. Ins., n. spp.

Capsus obsolefactus, pl. xxiii, fig. 13, p. 368, *lacus*, p. 369, pl. xxii, fig. 2, Florissant, SCUDDER, Tert. Ins., n. spp.

↓ *Aporema*, n. g. *Capsidae*, p. 369, for *A. præstrictum*, n. sp., Florissant, p. 370, pl. xx, fig. 4 ; SCUDDER, Tert. Ins.

Hadronema cinerescens, Florissant, SCUDDER, p. 370, pl. xxiv, fig. 12, Tert. Ins., n. sp.

Cholula triguttata, Wyoming, SCUDDER, p. 389, pl. vii, fig. 21, Tert. Ins., n. sp.

Tingitidae.

Piesma ? *rotunda*, Florissant, SCUDDER, p. 358, pl. xxiii, fig. 6, Tert. Ins., n. sp.

Monanthiu veterna, Florissant, SCUDDER, p. 359, pl. xxiii, figs. 5 & 9, Tert. Ins., n. sp.

↓ *Eotingis*, n. g. *Tingitidae*, p. 359, for *E. antennata*, n. sp., Florissant, p. 360, pl. xxiii, figs. 1 & 3 ; SCUDDER, Tert. Ins.

Reduviidae.

↓ *Eothes*, n. g. *Acanthaspidina*, *Reduviidae*, for *E. elegans*, n. sp., Florissant, pl. xxvi, fig. 5 ; SCUDDER, p. 355, Tert. Ins.

√*Tagalodes*, n. g. *Saicina*, *Reduviidæ*, p. 356, for *T. inermis*, n. sp., Florissant, p. 357, pl. xxvi, fig. 15; SCUDDER, Tert. Ins.

Hydrobatidæ, *Veliidæ*, *Galgulidæ*, *Notonectidæ*, *Corisidæ*.

Metrobates aternalis, Florissant, SCUDDER, p. 353, pl. xxii, fig. 15, Tert. Ins., n. sp.

√*Telmatrechus*, n. g. *Hydrobatidæ*, p. 351, for *T. parallelus*, n. sp., Wyoming, p. 353, pl. iv, fig. 1, and *Hygrotrechus stali*, Sc.; SCUDDER, Tert. Ins.

√*Stenovelis*, n. g. *Veliidæ*, p. 349, for *S. nigra*, n. sp., Florissant, p. 350, pl. xxii, figs. 8 & 14; SCUDDER, Tert. Ins.

√*Palæovelis*, n. g. *Veliidæ*, for *P. spinosa*, n. sp., Florissant, pl. xxii, fig. 13; SCUDDER, Tert. Ins. p. 349.

√*Necygonus*, n. g. *Galgulidæ*, p. 347, for *N. rotundatus*, n. sp., Wyoming, p. 348, pl. vii, fig. 8; SCUDDER, Tert. Ins.

Notonecta emersoni, Florissant, SCUDDER, Tert. Ins. p. 346, pl. xxii, fig. 11, n. sp.

√*Prosigara*, n. g., p. 343, for *P. flabellum*, n. sp., Florissant, p. 344, pl. xxii, fig. 12; SCUDDER, Tert. Ins.

Corisca vanduzeei, p. 344, pl. xxii, fig. 17, *immersa*, p. 345, fig. 16, Florissant, SCUDDER, Tert. Ins., n. spp.

Cicadidæ.

Cicada ? *lowei*, Lower Mesozoic in Australia, ETHERIDGE & OLLIFF, Mem. Geol. Surv. N.S.W., Pal. vii, p. 6, pl. i, fig. 1, n. sp.

Fulgoridæ.

√*Nyctophylax*, n. g., near *Enechophora*, for *N. uhleri*, p. 279, pl. xix, fig. 11, *vigil*, fig. 8, p. 280, n. spp., Florissant; SCUDDER, Tert. Ins.

Lystra ? *lei*, Wyoming, SCUDDER, Tert. Ins. p. 283, pl. vii, fig. 2, n. sp.

Fulgora populata, Wyoming, pl. vii, fig. 16, p. 284, *obticescens*, Florissant, pl. xix, fig. 1, p. 285, SCUDDER, Tert. Ins., n. spp.

Dictyophara bouvei, Florissant, SCUDDER, Tert. Ins. p. 286, pl. xxi, fig. 16, n. sp.

Cixius ? *proavus*, Florissant, SCUDDER, Tert. Ins. p. 287, pl. xix, fig. 14, n. sp.

Oliarus ? *lutensis*, Wyoming, SCUDDER, Tert. Ins. p. 288, pl. vii, fig. 18, n. sp.

√*Diaplegma*, n. g. *Cixiides*, p. 288, for the following n. spp. from Florissant: *haldemani*, p. 289, *veterascens*, *abductum*, pl. xv, fig. 8, p. 290, *venerabile*, *occultorum*, p. 291, *ruinosum*, *obdormitum*, p. 292; SCUDDER, Tert. Ins., n. sp.

√*Oliarites*, n. g. *Cixiides*, for *Mnemosyne terrentula*, Sc., which is figured, pl. vii, fig. 17; SCUDDER, Tert. Ins. p. 293.

√*Florissantia*, n. g. *Cixiides*, p. 293, for *F. elegans*, n. sp., Florissant, p. 294, pl. xix, fig. 12; SCUDDER, Tert. Ins.

Elidiptera regularis, Florissant; SCUDDER, p. 297, pl. xix, fig. 13, Tert. Ins., n. sp.

✓ *Hammapteryx*, n. g. *Ricaniides*, for *H. reticulata*, n. sp., Wyoming ; SCUDDER, Tert. Ins. p. 298, pl. vi, fig. 34.

Lithopsis elongata, Wyoming, SCUDDER, Tert. Ins. p. 301, pl. vi, fig. 28, n. sp.

✓ *Ficarasites*, n. g. *Flatides*, for *F. stigmatiolum*, n. sp., Wyoming, pl. vi, fig. 20 ; SCUDDER, Tert. Ins. p. 301.

Cercopidæ.

✓ *Cercopites*, n. g., for *C. umbratilis*, p. 316, pl. vii, fig. 9, *calliscens*, p. 317, pl. vi, fig. 32, n. spp., Wyoming ; SCUDDER, Tert. Ins.

Cercopis stricta, Wyoming, p. 318, pl. vii, fig. 15, *suffocata*, Florissant, p. 319, pl. xix, figs. 2 & 3, SCUDDER, Tert. Ins., n. spp.

✓ *Cercopyllis*, n. g. *Cercopidæ*, for *C. justicie*, pl. xlii, fig. 6, *delicatula*, fig. 11, p. 471, *adolescens*, fig. 12, p. 472, n. spp., Triassic Beds in Colorado ; SCUDDER, Mem. Bost. Soc. iv.

✓ *Locrites*, n. g., for *L. copei*, p. 323, pl. xxi, fig. 19, *whitei*, fig. 17, p. 324, n. spp., Florissant ; SCUDDER, Tert. Ins. iii.

✓ *Pelecephora*, n. g., p. 324, for the following n. spp. : *P. maculata*, p. 326, pl. xx, figs. 10 & 17, *patefacta*, Wyoming, pl. vii, fig. 7, *marvinei*, pl. xx, figs. 11-13, pl. xxi, figs. 9 & 12, p. 327, *communis*, pl. xx, figs. 3, 20, & 21, p. 328, *prævalens*, pl. xx, fig. 1, pl. xxi, fig. 2, *inornata*, pl. xx, fig. 15, p. 329, Florissant ; SCUDDER, Tert. Ins.

✓ *Lithecephora*, n. g., p. 329, for *L. setigera*, pl. xx, fig. 22, *diaphana*, pl. xxi, fig. 13, p. 330, *unicolor*, pl. xxi, figs. 4, 5, 11, & 14, *murata*, figs. 3 & 8, p. 331, n. spp., Florissant ; SCUDDER, Tert. Ins.

✓ *Prinecephora*, n. g., for *P. balteata*, n. sp., Florissant, pl. xx, fig. 14 ; SCUDDER, Tert. Ins., p. 332.

✓ *Palaphrodes*, n. g., p. 333, for *P. cincta*, pl. xx, fig. 16, & pl. xxi, fig. 15, p. 334, *obscura*, pl. xxi, fig. 18, *irregularis*, pl. xx, figs. 2 & 18, pl. xxi, figs. 6 & 7, p. 335, *obliqua*, pl. xxi, fig. 10, *transversa*, p. 336, n. spp., Florissant ; SCUDDER, Tert. Ins.

Clastoptera comstocki, Florissant, SCUDDER, Tert. Ins. p. 338, pl. xix, fig. 22, n. sp.

Jassidæ.

Tettigonia priscomarginata, Wyoming, p. 302, pl. vii, fig. 4, *priscotincta*, pl. xix, fig. 9, Florissant, *priscovariegata*, Wyoming, p. 303, SCUDDER, Tert. Ins., n. spp.

Agallia lewisii, p. 305, pl. xix, figs. 7 & 21, *flacoida*, fig. 18, *instabilis*, pl. xxi, fig. 1, p. 306, *abstracta*, p. 307, pl. xix, fig. 5, Florissant, SCUDDER, Tert. Ins., n. spp.

Gypona cinervia, Florissant, SCUDDER, Tert. Ins. p. 308, pl. xix, fig. 4, n. sp.

Jassus ? *latebræ*, Florissant, SCUDDER, Tert. Ins. p. 308, pl. xx, fig. 19, n. sp.

Thamnotettix mutilata, pl. vii, fig. 6, *gunnettii*, pl. vi, fig. 33, & pl. vii,

fig. 5, p. 309, Wyoming, *fundi*, Florissant, p. 310, pl. xix, fig. 20, SCUDDER, Tert. Ins., n. spp.

Cicadula savosa, Wyoming, SCUDDER, Tert. Ins. p. 310, pl. vi, fig. 26, n. sp.

Acocephalus callosus, Florissant, SCUDDER, Tert. Ins. p. 311, pl. xix, fig. 15, n. sp.

✓ *Jassopsis*, n. g., near *Thamnotettix*, for *J. evidens*, n. sp., Florissant, pl. xix, fig. 16; SCUDDER, Tert. Ins. p. 312.

Celidia wyomingensis, Wyoming, SCUDDER, Tert. Ins. p. 313, pl. iv, fig. 8, n. sp.

✓ *Docimus*, n. g., for *D. psylloides*, n. sp., Florissant; SCUDDER, Tert. Ins. p. 314, pl. xix, figs. 6 & 17.

Psyllidæ.

✓ *Necropsylla*, n. g. *Aphalarinæ*, for *N. rigida*, n. sp., Florissant, pl. xii, figs. 11 & 21; SCUDDER, Tert. Ins. p. 276.

✓ *Catopsylla*, n. g., *Psyllinæ*, for *C. prima*, n. sp., Florissant; SCUDDER, Tert. Ins. p. 277.

Aphididæ.

Anconatus bucktoni, Florissant, SCUDDER, Tert. Ins. p. 272, n. sp.

Pterostigma nigrum, Florissant, SCUDDER, Tert. Ins. p. 275, n. sp.

✓ *Cutaneura*, n. g., for *C. absens*, *rileyi*, n. spp., Florissant; SCUDDER, Tert. Ins. p. 245.

✓ *Archilachnus mudgei*, Florissant, SCUDDER, Tert. Ins. p. 247, n. sp.

✓ *Geranchon*, n. g., for *G. davisii*, n. sp., Florissant, and *Lachnus petrorum*, Sc.; SCUDDER, Tert. Ins. p. 248.

✓ *Sbenaphis*, n. g., p. 250, for *Lachnus quesneli*, Sc., and *S. uhleri*, p. 252, *lassa*, p. 253, n. spp., Florissant, SCUDDER, Tert. Ins.

✓ *Aphantaphis*, n. g., p. 253, for *A. exsua*, n. sp., Florissant, p. 254; SCUDDER, Tert. Ins.

Siphonophoroides rafinesquei, p. 256, *propinqua*, p. 257, Florissant, SCUDDER, Tert. Ins., n. spp.

✓ *Lithaphis*, n. g., p. 257, for *L. diluta*, n. sp., Florissant, p. 258; SCUDDER, Tert. Ins.

✓ *Tetraphis*, n. g., p. 258, for *Siphonophoroides simplex*, Buck., and *T. walshii*, n. sp., Florissant, p. 260; SCUDDER, Tert. Ins.

✓ *Aphidopsis*, n. g., p. 260, for the following n. spp. from Florissant: *subterna*, p. 261, *hargeri*, p. 262, *lutaria*, p. 263, *margarum*, pl. xviii, fig. 8, *dalli*, p. 264, *emaciata*, p. 265; SCUDDER, Tert. Ins.

✓ *Oryclaphis*, n. g. for *O. recondita*, pl. xviii, fig. 14, p. 266, *lesueurii*, p. 267, n. spp., Florissant; SCUDDER, Tert. Ins.

✓ *Sychnobrochus*, n. g. for *S. revivescens*, n. sp., Florissant, pl. xviii, fig. 6; SCUDDER, Tert. Ins. p. 268.

✓ *Amalancon*, n. g. *Schizoneurinæ* for *A. lutosus*, n. sp., Florissant, pl. xviii, fig. 13; SCUDDER, Tert. Ins. p. 270.

Coccidæ.

Monophlebus simplex, Florissant, SCUDDER, Tert. Ins. p. 242, n. sp.

NEUROPTERA.

Trichoptera.

Hydropsyche marcens, Florissant, SCUDDER, Tert. Ins. p. 180, pl. xv, fig. 7, n. sp.

Polycentropus exesus, p. 181, *P. ? eviratus*, p. 182, pl. xiii, fig. 7, Florissant, SCUDDER, Tert. Ins., n. spp.

↓ *Derobrochus*, n. g. (*Hydropsychidæ*), p. 182, for *D. abstractus*, *cænulentus*, p. 183, *æternus*, *commoratus*, p. 184, *marcidus*, p. 185, pl. xv, fig. 2, *crateræ*, p. 186, pl. xiii, fig. 13, & pl. xv, fig. 4, n. spp., Florissant ; SCUDDER, Tert. Ins.

✓ *Litobrochus*, n. g. (*Hydropsychidæ*), for *L. externatus*, n. sp., Florissant, pl. xv, fig. 10 ; SCUDDER, p. 186, Tert. Ins.

✓ *Leptobrochus*, n. g. (*Hydropsychidæ*) for *L. luteus*, n. sp., Florissant, pl. xv, figs. 1 & 3 ; SCUDDER, p. 187, Tert. Ins.

✓ *Mesobrochus*, n. g. (*Hydropsychidæ*) for *M. lethæus*, pl. xv, fig. 11, p. 188, *imbecillus*, fig. 13, p. 189, n. spp., Florissant ; SCUDDER, Tert. Ins.

✓ *Paladicella*, n. g. (*Hydropsychidæ*) for *P. eruptionus*, n. sp., Florissant, p. 189, pl. xv, fig. 14, n. sp.

Tinodes ? paludigena, Florissant, SCUDDER, p. 190, pl. xv, fig. 9, Tert. Ins., n. sp.

Setodes portionales, p. 191, pl. xv, fig. 15, *abbreviata*, p. 192, Florissant, SCUDDER, Tert. Inst., n. spp.

Limnophilus soporatus, Florissant, SCUDDER, p. 193, pl. xv, fig. 5, Tert. Ins., n. sp.

Indusia culculosa, p. 194, pl. iv, fig. 4, Wyoming, SCUDDER, Tert. Ins., n. sp.

Neuronia evanescens, Florissant, SCUDDER, p. 196, pl. xiii, fig. 3, Tert. Ins., n. sp.

Phryganea labefacta, Florissant, p. 197, pl. xiii, fig. 5, SCUDDER, Tert. Ins., n. sp.

✓ *Limnopsyche*, n. g. (*Phryganides*), p. 198, for *L. dispersa*, n. sp., Florissant, p. 199, pl. xiii, fig. 2, SCUDDER, Tert. Ins.

Planipennia.

Panorpa rigida, Florissant, SCUDDER, p. 176, Tert. Ins.

Raphidia tranquilla, Florissant, SCUDDER, Tert. Ins. p. 154, pl. xiv, fig. 2, n. sp.

Inocellia veterana, p. 156, pl. xiv, fig. 1, *somnolenta*, p. 157, fig. 12, *tumulata*, p. 158, fig. 15, *eventa*, p. 160, Florissant, SCUDDER, Tert. Ins., n. spp.

✓ *Palæochrysa*, n. g. *Chrysopidæ* for *P. stricta*, n. sp., Florissant, pl. xiv, figs. 13 & 14 ; SCUDDER, p. 166, Tert. Ins.

✓ *Tribochrysa*, n. g. *Chrysopidæ*, p. 168, for *T. vetuscula*, p. 170, pl. xiv,

fig. 9, *firmata*, p. 172, figs. 6, 7, 10, & 11, n. spp., Florissant ; SCUDDER, Tert. Ins.

Osmylus requietus, Florissant, SCUDDER, Tert. Ins. p. 162, pl. xiv, figs. 3 & 8, n. sp.

Psocidæ.

✓ *Paropsocus*, n. g., p. 117, for *P. disjunctus*, n. sp., Florissant, p. 118, pl. v, fig. 51 ; SCUDDER, Tert. Ins.

Ephemeridæ.

Ephemera tabifica, p. 120, *immobilis*, p. 121, pl. xii, fig. 5, *macilentia*, figs. 4 & 10, *pumicosa*, figs. 7, 15, & 16, p. 122, *interempta*, p. 123 *exsucca*, p. 124, pl. xii, fig. 9, Florissant, SCUDDER, Tert. Ins. ; *E. culleni*, Tertiary formations of Australia, ETHERIDGE & OLLIFF, Mem. Geol. Surv. N. S. W., Pal. vii, p. 8, pl. i, figs. 3-9 : n. spp.

Odonata.

✓ *Lithagrion*, n. g., p. 134, for *L. hyalinum*, p. 135, pl. xiii, fig. 4, *umbratum*, p. 136, figs. 12 & 14, n. spp., Florissant ; SCUDDER, Tert. Ins.

Agrion mascescens, p. 138, pl. xiii, figs. 8 & 9, *exsularis*, p. 139, fig. 6, *telluris*, p. 140, fig. 10, Florissant, SCUDDER, Tert. Ins., n. spp.

Æschna solida, p. 143, pl. xiii, fig. 1, *Æ. (Basieschna) separata*, p. 144, fig. 15, *Æ. larvata*, p. 145, fig. 11, Florissant, SCUDDER, Tert. Ins., n. spp.

THYSANURA.

Lepisma platymera, Florissant, SCUDDER, Tert. Ins. p. 102, pl. xii, fig. 18, n. sp.

✓ *Ballostoma*, new suborder for *Planocephalus aselloides*, Sc. ; SCUDDER, Tert. Ins. p. 94.

ORTHOPTERA.

Forficulidæ.

✓ *Labiduromma*, n. g., p. 203, for the following n. spp. from [Florissant : *avia*, p. 205, pl. xvi, figs. 5, 22, 3, 11, & 23, *hormansi*, fig. 1, p. 206, *mortale*, figs. 2, 6, 20, p. 207, *commixtum*, p. 208, pl. xvi, figs. 10 & 17, *gilberti*, fig. 14, p. 211, *exsulatum*, fig. 12, p. 212, *infernum*, fig. 7, *labeus*, figs. 13, 16, & 9, p. 214 ; SCUDDER, Tert. Ins.

Blattidæ.

Etblattina occidentalis, Carboniferous deposits in N. America, SCUDDER, Mem. Bost. Soc. iv, p. 410, pl. xxxii, fig. 4 ; *E. persistens*, Triassic beds in Colorado, SCUDDER, Mem. Bost. Soc. iv, p. 459, pl. xli, fig. 7, & pl. xlii, figs. 10 & 19 : n. spp.

Anthracoblattina triassica, Triassic beds in Colorado, SCUDDER, Mem. Bost. Soc. iv, p. 464, pl. xli, fig. 9, n. sp.

Mylacridæ, table of genera of ; SCUDDER, Mem. Bost. Soc. iv, p. 401.

Promylacris testudo, p. 403, pl. xxxii, fig. 6, *rigida*, p. 404, pl. xxxi, fig. 6, Carboniferous deposits in N. America, SCUDDER, Mem. Bost. Soc. iv, n. spp.

Paromylacris ampla, Carboniferous deposits of N. America, SCUDDER, Mem. Bost. Soc. iv, p. 408, pl. xxxi, fig. 7, n. sp.

Lithomylacris pauperata, Carboniferous deposits in N. America, SCUDDER, Mem. Bost. Soc. iv, p. 409, pl. xxxii, fig. 5, n. sp.

Archimylacris paucinervis, Carboniferous deposits in N. America, SCUDDER, Mem. Bost. Soc. iv, p. 411, pl. xxxi, fig. 5, n. sp.

Paralatindia saussurei, Wyoming, SCUDDER, p. 216, Tert. Ins. iii, n. sp.

Zetobora brunneri, Florissant, SCUDDER, p. 217, pl. xvii, fig. 12, Tert. Ins., n. sp.

Palæomantidæ.

Palæomantidæ, n. fam. of *Orthoptera*, p. 155, for *Lithomantis carbonaria*, Woodw., and *L. woodwardi*, n. sp., pl. i, Commenytry ; BROGNIART, Bull. Soc. Philom. (8) ii.

Protophasmidæ.

√ *Scudderia*, n. g., near *Haplophlebium*, for *S. spinosa*, pl. ii, fig. 1, *lobata*, figs. 2 & 3, n. spp., Commenytry ; BROGNIART, Bull. Soc. Philom. (8) ii, p. 158.

Phasmidæ.

Agathemera reclusa, Florissant, SCUDDER, p. 219, pl. xvii, fig. 11, Tert. Ins., n. sp.

Gryllidæ.

√ *Protenemobius*, n. g., p. 234, for *P. induratus*, p. 235, pl. vi, fig. 18, *smithii*, p. 236, fig. 22, n. sp., Wyoming ; SCUDDER, Tert. Ins.

Locustidæ.

Cymatomera maculata, Florissant, SCUDDER, Tert. Ins., p. 230, pl. xvii, fig. 7, n. sp.

Orchelimum placidum, Florissant, SCUDDER, Tert. Ins. p. 231, pl. xvii, figs. 16, 18, & 19, n. sp.

Locusta silens, Florissant, SCUDDER, Tert. Ins. p. 232, pl. xvii, figs. 9 & 10, n. sp.

Gryllacris cineris, Florissant, SCUDDER, Tert. Ins. p. 233, pl. xvii, fig. 17, n. sp.

Acridiidæ.

√ *Tyrbula*, n. g. *Truxalidæ*, for *T. multispinosa*, Wyoming, pl. xvii, fig. 13, p. 221, *russellii*, figs. 1-4, p. 221, Florissant, n. spp. ; SCUDDER, Tert. Ins. iii.

Gomphocerus abstrusus, Florissant, SCUDDER, p. 223, pl. xvii, fig. 6, Tert. Ins., n. sp.

✓*Nauthacia*, n. g. *Ædipodidæ*, for *N. torpida*, n. sp., Florissant ; SCUDDER, Tert. Ins., p. 224.

✓*Ædipoda præfocata*, Florissant, SCUDDER, Tert. Ins. p. 225, pl. xvii, fig. 5, n. sp.

✓*Taphacris*, n. g. *Eremobidæ*, for *T. reliquata*, n. sp., Florissant ; SCUDDER, Tert. Ins. p. 226, pl. xii, figs. 8 & 19.

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Pretended attacks of larva of *Culex* on man ; FICALBI (255, 256).—*Diptera* attacking man ; SENATOR (773).—Larvæ of *Eristalis* ; P. E. Soc. Wash. i, p. 264.—*Hypoderma* sp. in the human body ; *Ins. Life*, ii, p. 238.—Larvæ of *Agrypnus murinus* in stomach ; SANDBERG (719).

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CARABIDÆ.

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↓ *Feanus*, n. g. *Anchomeninæ*, p. 107, for *F. spinipennis*, n. sp., Bhamo ; p. 108, BATES, Ann. Mus. Genov. (2) vii.

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P. opaciceps, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, p. 714 ; *P. occidentalis*, W. Australia, *id. op. cit.* v, p. 553 : n. spp.

Philoscaphus duboulayi, Queensland, BLACKBURN, p. 554, P. Linn. Soc. N.S.W. (2) v, n. sp.

Phlæocarabus unimaculatus, p. 708, *umbratus*, p. 709, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Phorticosomus robustus, S. Australia, BLACKBURN, p. 135, Tr. R. Soc. S. Austr. xii ; *P. randalli*, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, p. 722 : n. spp.

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Platythorax (Carenum) transversicollis, Chaud., redescribed ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, p. 716.

Plectes biebersteini, Mén., = (*agnatus*, Gangl.) ; *P. fossiger* and *steveni* noticed ; ROST, Deutsche e. Z. 1890, p. 256. *P. starcki* and *reitteri*, n. varr. of, described : STARCK, Wien. ent. Z. ix, p. 75.

P. imperator, p. 71, *basilianus*, p. 73, Caucasus, STARCK, Wien. ent. Z. ix, n. spp.

Promecoderus, revision of ; SLOANE, P. Linn. Soc. N.S.W. (2) v, pp. 189-225.

P. pacificus, p. 206, *nigellus*, p. 211, *comes*, p. 214, *politus*, p. 218, *insignis*, p. 222, *blackburni*, p. 223, *distinctus*, p. 224, Australia, SLOANE, t. c., n. spp.

Pseudolimnæum inustum, habitat ; KRAATZ, Deutsche e. Z. 1890, p. 211.

P. circassicum, Utsch-Dere, REITTER, Wien. ent. Z. ix, p. 189, n. sp.

Pseudoæna tenebrosa, New Guinea, SLOANE, Rec. Austral. Mus. i, p. 102, n. sp.

Pterostichus microphthalmus and *spinicollis*, distinctive characters noticed ; REITTER, Wien. ent. Z. ix, p. 266.

P. (Pseudoderus) rufo-piceus, Turkestan, HEYDEN, Deutsche e. Z. 1890, p. 357 ; *P. (?) prattii*, China, BATES, Ent. xxiii, p. 212 : n. spp.

Rhytisternus bovilli, Australia, BLACKBURN, p. 730, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Sarothrocrepis suavis, Port Lincoln, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, p. 711, n. sp.

Scarites heydeni, Turkestan, SEMENOW, p. 193, Hor. Ent. Ross. xxiv, n. sp.

Scolyptus obscuripes, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, p. 1247, n. sp.

Silphomorpha amabilis, Cast., descriptive note ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, p. 1246.

Simodontus, notes on the species of ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, pp. 732-734.

S. murrayensis, S. Australia, BLACKBURN, t. c. p. 737, n. sp.

Stenolophus cyanellus, p. 103, *gonidius*, p. 104, Burma, BATES, Ann. Mus. Genov. (2) vii ; *S. cæruleus*, Australia, BLACKBURN, p. 555, P. Linn. Soc. N.S.W. (2) v : n. spp.

- Tachycellus oreophilus*, Carinthia, DANIEL, Deutsche e. Z. 1890, p. 210, n. sp.
- Tefftus jamesoni*, Centr. Africa, BATES, P. Z. S. 1890, p. 481, and in Jameson, Story Rear Column, p. 423, n. sp.
- Thermoscelis dobretsbergeri*, Russian Armenia, REITTER, Deutsche e. Z. 1890, p. 385, n. sp.
- Trechus utschderensis*, Circassia, REITTER, Deutsche e. Z. 1890, p. 165, n. sp.
- Trianogenius arabicus*, Yemen, GESTRO, Ann. Mus. Genov. (2) vii, p. 20, n. sp.
- Tribax*: application of the name; MORAWITZ, Bull. Ac. Pet. xxxiii, p. 35.
- Trigonothops plagiata* and others, variation noticed; BLACKBURN, p. 82, Tr. R. Soc. S. Austr. xiii.
- Trigonotoma levisii*, note on, with n. var. *bhamoensis*; BATES, p. 105, Ann. Mus. Genov. (2) vii.
- Xanthophæa loweri*, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 304, n. sp.

DYTISCIDÆ.

[Cf. RÉGIMBART (643), SEVERIN (776, 777, 778), SHARP (779).]

Agabus bipustulatus, p. 266, *chalconotus*, p. 269, metamorphoses; XAMBEU, Rev. d'Ent. ix.

Bidessus bufo, gentilis, Ceylon, SHARP, Tr. E. Soc. 1890, p. 344, n. spp.

Canthydrus obscuripennis, p. 257, *crassicornis*, p. 258, *balzani, sexnotatus*, p. 259, *flavopictus*, p. 260, *infuscatus*, p. 261, *grammopterus, flavolineatus*, p. 262. S. America, RÉGIMBART, Ann. Mus. Genov. (2) vii, n. spp.

Cybister wehnckianus, = (*Dytiscus extenuans*, Wlk.), note on; SHARP, Tr. E. Soc. 1890, p. 348. *C. ellipticus* and *explanatus*, distinctive characters; RICKSECKER, Zoe, i, p. 304.

C. cardoni, E. India, SEVERIN, p. cxcii, C.R. Ent. Belg. 1890, n. sp.

Eretes helvolus and *succinctus*, Klug, characters noted; LEPRIEUR, Deutsche e. Z. 1890, p. 80.

Graphoderes vittatus, Fab., var. ? noticed; SCHÖNFELDT, Ent. Nachr. xvi, p. 169.

Hydaticus zonatus and *cinereus*, differential characters; THOMSON, p. 1527, Opusc. Ent. xiv.

H. platteeuwi, Sumatra, SEVERIN, p. xcvi, C.R. Ent. Belg. 1890, n. sp.

Hydrocoptus subvittulus, Motsch., described; SHARP, Tr. E. Soc. 1890, p. 340.

Hydroporus inefficiens, Wlk., referred to *Laccophilus*, and described; SHARP, Tr. E. Soc. 1890, p. 341.

Hydrovatus cardoni, E. India, SEVERIN, p. clxxxix, C.R. Ent. Belg. 1890; *H. sinister*, Ceylon, SHARP, Tr. E. Soc. 1890, p. 343: n. spp.

Hyphoporus elevatus, ♀ noticed; SEVERIN, p. cxci. C.R. Ent. Belg. 1890.

H. bengalensis, E. India, SEVERIN, *l. c.*; *H. pugnator*, Ceylon, SHARP, Tr. E. Soc. 1890, p. 345 : n. spp.

Hyphydrus : table of the characters of the European species ; LEPRIEUR, Bull. Soc. Ent. Fr. 1890, p. lxvii. *H. indicus*, ♀ described ; SHARP, Tr. E. Soc. 1890, p. 345.

Hyphydrus renardi, E. India, SEVERIN, p. cxc, C.R. Ent. Belg. 1890, n. sp.

Laccophilus parvulus, Aubé, = (*orientalis*, Aubé, and *obtus*, Shp.) ; SEVERIN, p. clxxxviii, C.R. Ent. Belg. 1890.

L. balzani, p. 263, *obliquatus*, p. 264, *nubilus*, p. 265, *augustus*, p. 266, S. America, RÉGIMBART, Ann. Mus. Genov. (2) vii ; *L. anticatus*, Ceylon, SHARP, Tr. E. Soc. 1890, p. 341 : n. spp.

Macrodytes marginalis and *circumcinctus*, differential characters ; THOMSON, p. 1526, Opusc. Ent. xiv.

Neptosternus taprobanicus, Ceylon, SHARP, Tr. E. Soc. 1890, p. 342, n. sp.

Platynectes rodriguezi, Guatemala, SEVERIN, p. xcvi, C.R. Ent. Belg. 1890, n. sp.

Rhantus taprobanicus, Ceylon, SHARP, Tr. E. Soc. 1890, p. 346, n. sp.

GYRINIDÆ.

[Cf. EDWARDS (212), RÉGIMBART (643), SCHAUFUSS (727)].

Dineutes olivaceus, p. 62, *jikelii*, p. 63, Abyssinia, SCHAUFUSS, Ent. Nachr. xvi, n. spp.

Gyrinus : the characters of the British species ; EDWARDS, Ent. xxiii, pp. 105-109, woodcuts.

HYDROPHILIDÆ.

(Cf. BLACKBURN (60, 62), FRIVALDSZKY (285), GUILLEBEAU (332), HORN (377, 378, 379), KUWERT (468), REITTER (648), SCUDDER (754), SEMENOW (770), SHARP (779).]

Amphiops simplex, *pedestris*, p. 354, *mirabilis*, p. 355, Ceylon, SHARP, Tr. E. Soc. 1890, n. spp.

Anacæna, *Paracymus*, and allies, characters discussed ; HORN, p. 261, Tr. Am. Ent. Soc. xvii.

Armostus, n. g., near *Oosternum*, p. 358, for *A. optatus*, n. sp., Ceylon ; SHARP, Tr. E. Soc. 1890.

Berosus decrescens, Wlk., redescribed ; SHARP, Tr. E. Soc. 1890, p. 353. *B. spinosus* and *guttalis*, supplementary note ; FAUVEL, Rev. d'Ent. ix, p. 80.

B. rubiginosus, p. 318, *kruperi*, p. 320, Syria, KUWERT, Verh. Ver. Brunn. xxviii, n. spp.

Cercyon vicinale, Wlk., = (*nigriceps*, Motsch., and *atriceps*, Gemm.) ; SHARP, Tr. E. Soc. 1890, p. 357.

C. lencoranus, p. 320, *paradoxus*, Russia, p. 321, *agnotus*, Sicily, p. 322,

KUWERT, Verh. Ver. Brünn. xxviii; *C. uniformis*, Ceylon, SHARP, Tr. E. Soc. 1890, p. 357; *C. indistinctus*, p. 297, *floridanus*, p. 303, N. America, HORN, Tr. Am. Ent. Soc. xvii: n. spp.

Creniphilus, Motsch., in this should be merged *Crenitis*, Bed.; HORN, p. 261, Tr. Am. Ent. Soc. xvii.

C. moratus, *monticola*, p. 271, *degener*, p. 273, N. America, HORN, Tr. Am. Ent. Soc. xvii: n. spp.

✓ *Crephelelochaes*, n. subg. of *Helelochaes*; KUWERT, p. 38, Verh. Ver. Brünn. xxviii.

• *C. livornicus*, Italy, KUWERT, p. 327, Verh. Ver. Brünn. xxviii, n. sp.

✓ *Crepilimnebius*, n. subg. of *Limnebius*; KUWERT, p. 105, Verh. Ver. Brünn. xxviii.

• *C. tibialis*, N. Africa, KUWERT, p. 314, Verh. Ver. Brünn. xxviii, n. sp.

Cryptopleurum americanum, Ohio, HORN, p. 312, Tr. Am. Ent. Soc. xvii, n. sp.

Cyclonotum simplex, Shp., = (*Hydrobius stultus*, Wlk.); SHARP, Tr. E. Soc. 1890.

Cymbiodyta, Bed., should include *Hydrocombis*, Shp.; HORN, p. 240, Tr. Am. Ent. Soc. xvii.

C. morata, New Mexico, p. 256, *blanchardi*, N. America, p. 258, HORN, Tr. Am. Ent. Soc. xvii, n. spp.

Dactylosternum, characters discussed; HORN, p. 282, Tr. Am. Ent. Soc. xvii.

D. advectum, Florida, HORN, Tr. Am. Ent. Soc. xvii, p. 284, n. sp.

✓ *Embololimnebius*, n. subg. of *Limnebius*; KUWERT, p. 91, Verh. Ver. Brünn. xxvii.

E. crassipes, Holland, *baudi*, *angusticonus*, p. 310, *laticonus*, p. 311, Sicily, KUWERT, Verh. Ver. Brünn. xxviii, n. spp.

✓ *Enochroides*, n. g., for *E. decorus*, n. sp., Portugal; KUWERT, p. 327, Verh. Ver. Brünn. xxviii.

✓ *Epicercyon*, n. n. for *Cerycon*, Rey; KUWERT, p. 168, Verh. Ver. Brünn. xxviii.

Epimetopus flavidulus, Ceylon, SHARP, Tr. E. Soc. 1890, p. 355, n. sp.

✓ *Graphelochares*, n. subg. of *Helelochaes*; KUWERT, p. 38, Verh. Ver. Brünn. xxviii.

Helelochaes: cf. *Crephelelochaes*, *Graphelochares*.

Helelochaes nigrifolius, Sicily, KUWERT, Nat. Sicil. ix, p. 8, and Verh. Ver. Brünn. xxviii, p. 34; *H. minutissimus*, Syria, KUWERT, p. 304, Verh. Ver. Brünn. xxviii; *H. taprobanicus*, p. 351, *anchoralis*, *lentus*, *densus*, p. 352, Ceylon, SHARP, Tr. E. Soc. 1890: n. spp.

Henicocerus halbherri, Tyrol, REITTER, Deutsche e. Z. 1890, p. 145, n. sp.

✓ *Helocombis*, n. g., type *Philydrus bifidus*, Lec.; HORN, p. 259, Tr. Am. Ent. Soc. xvii.

Helophorus brevitarsis, Bosnia, KUWERT, Verh. Ver. Brünn. xxviii, p. 191, n. sp.

✓ *Helocharimorphus*, n. g., p. 306, for *H. sharpi*, n. sp., Egypt, p. 307, KUWERT, Verh. Ver. Brünn. xxviii.

Hydræna perparvula, Bosnia, KUWERT, p. 303 ; *H. parvicollis*, Thes-saly, p. 326, KUWERT, Verh. Ver. Brünn. xxviii : n. spp.

Hydrobaticus clypeatus, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 305, n. sp.

Hydrobiomorpha helenæ, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, p. 741, n. sp.

Hydrobius arcticus, N. Europe, KUWERT, p. 304, Verh. Ver. Brünn. xxviii ; *H. minimus*, p. 348, *evanescens*, *H. (Anacæna) advena*, p. 349, Ceylon, SHARP, Tr. E. Soc. 1890 : n. spp.

Hydrophilus piceus, embryology ; HEIDER. (353).

H. ganssuensis, China, SEMENOW, p. 194, Hor. Ent. Ross. xxiv, n. sp.

Laccobius albipes, Bosnia, p. 82, *eximius*, p. 314, *singularis*, p. 315, *minimus*, Egypt, *sternocrinis*, Syria, p. 316, *signatus*, Spain, *præcipuus*, Egypt, p. 317, KUWERT, Verh. Ver. Brünn. xxviii ; *L. rectus*, Ceylon, SHARP, Tr. E. Soc. 1890, p. 353 : n. spp.

Limnebius, cf. *Crepilimnebius*, *Embololimnebius*, *Odontolimnebius*, *Tricholimnebius*.

L. rubropiceus, Caucasus, p. 312, *dissimilis*, St. Remo, p. 313, KUWERT, Verh. Ver. Brünn. xxviii ; *L. stagnalis*, Styria, GUILLEBEAU, Rev. d'Ent. ix, p. 33 : n. spp.

Megasternum, = (*Pachysternum*, Motsch.) ; SHARP, Tr. E. Soc. 1890, p. 358.

M. caucasicum, Caucasus, p. 323, *calabricum*, Sicily, p. 324, KUWERT, Verh. Ver. Brünn. xxviii ; *M. punctulatum*, Louisiana, HORN, p. 309, Tr. Am. Ent. Soc. xvii : n. spp.

Octhebius : monograph of the N. American species ; HORN, Tr. Am. Ent. Soc. xvii, pp. 17, &c.

O. haberfelneri, Austrian Alps, REITTER, Deutsche e. Z. 1890, p. 385, n. sp.

✓ *Odontolimnebius*, n. subg. of *Limnebius* ; KUWERT, p. 96, Verh. Ver. Brünn. xxviii.

O. adjunctus, N. Africa, KUWERT, p. 312, Verh. Ver. Brünn. xxviii, n. sp.

Pachysternum sibiricum, Siberia, p. 324, *pusillum*, Russia, p. 325, KUWERT, Verh. Ver. Brünn. xxviii, n. spp.

Paraberosus nigriceps, Mesopotamia, *melanocephalus*, Arabia, KUWERT, p. 319, Verh. Ver. Brünn. xxviii, n. spp.

✓ *Paracymorphus*, n. g. for *P. globuloides*, n. sp., Sicily ; KUWERT, p. 307, Verh. Ver. Brünn. xxviii.

✓ *Paracymus caucasicus*, Asia Minor, KUWERT, p. 307, Verh. Ver. Brünn. xxviii, n. sp.

✓ *Pemelus*, n. g. for *Cercyon costatus*, Lec. ; HORN, p. 309, Tr. Am. Ent. Soc. xvii.

✓ *Phenotypus*, n. g. (*Cyclonoti*) for *Cyclonotum palmarum*, Schwarz ; HORN, Tr. Am. Ent. Soc. xvii, p. 285.

Philydrus: HORN revises the genera and species of N. America allied to; Tr. Am. Ent. Soc. xvii, pp. 237-278. *P. escuriens*, Wlk., = (*Pylophilus nigriceps*, Motsch.); SHARP, Tr. E. Soc. 1890, p. 350.

Philydrus mesopotamiae, Mesopotamia, p. 60, *flavus*, Portugal, p. 305, *ragusæ*, Sicily, p. 306, KUWERT, Verh. Ver. Brünn. xxviii; *P. iteratus*, p. 349, *fragilis*, p. 340, *abnormalis*, p. 341, Ceylon, SHARP, Tr. E. Soc. 1890; *P. californicus*, p. 248, *hamiltoni*, p. 249, N. America, HORN, Tr. Am. Ent. Soc. xvii: n. spp.

Protosternum, n. g. near *Dactylosternum*, for *P. atomarium*, n. sp., Ceylon; SHARP, p. 356, Tr. E. Soc. 1890.

Sphæridini of N. America revised; HORN, Tr. Am. Ent. Soc. xvii, p. 279.

Sphæridium quinquemaculatum, Fab., = (*tricolor*, Wlk.); SHARP, Tr. E. Soc. 1890, p. 357.

S. chinense, Jenking, FRIVALDSZKY, Term. füzetek, xii, p. 198, n. sp.

Tricholinnebius, n. subg. of *Limnebius*; KUWERT, p. 88, Verh. Ver. Brünn. xxviii.

T. barbifer, Holland, KUWERT, p. 308, Verh. Ver. Brünn. xxviii, n. sp.

PLATYPSYLLIDÆ.

Platypsyllus: ultimate larva described; RILEY, Ent. Am. vi, p. 27, woodcuts, and HORN, t. c. p. 55.

STAPHYLINIDÆ.

[Cf. EPPELSHEIM (226, 227, 228, 229), FAUVEL (250, 251), GESTRO (300), MEINERT (526), REITTER (648, 657), SCUDDER (754), WASMANN (880, 883, 884, 885).]

Remarks on ants'-nest *Staphylinidæ*; WASMANN (880).

For new genus in amber, see Palæo-entomology.

Aleochara (Ceranota) adusta, Caucasus, p. 163, *A. (C.) consors*, Caucasus, p. 217, EPPELSHEIM, Wien. ent. Z., n. spp.

Anthobium starcki, Circassia, REITTER, Wien. ent. Z. ix, p. 190, n. sp.

Apteranillus foreli, N. Africa, WASMANN, Deutsche e. Z. 1890, p. 390, pl. ii, fig. 1, n. sp.

Astilbus memnonius and *tristis*, note on; WASMANN, Deutsche e. Z. 1890, p. 300.

Atemeles emarginatus, larva, habits; WASMANN, Tijdschr. Ent. xxxiii, pp. 262-265.

Atheta (Bessobia) callicerina, p. 219, *A. (Microdota) filicornis*, p. 221, Caucasus, EPPELSHEIM, Wien. ent. Z. ix; *A. (Homalota) armeniaca*, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, p. 165: n. spp.

Bolitochara obliqua, Er., n. var. *caucasica*; EPPELSHEIM, Wien. ent. Z. ix, p. 161.

Cafus ragazzii, Red Sea, GESTRO, Ann. Mus. Genov. (2) vii, p. 32, n. sp.

Cephaloplectus, note on; WASMANN, Deutsche e. Z. 1890, p. 316.

Cryptobium nigrobadium, Nagpore, EPPELSHEIM, Wien. ent. Z. ix, p. 278, n. sp.

Drusilla bomfordi, Simla, EPPELSHEIM, Wien. ent. Z. ix, p. 273, n. sp.

Ecitophila, n. g., near *Myrmedonia*, for *E. omnivora*, n. sp., Rio de Janeiro, pl. ii, fig. 5; WASMANN, Deutsche e. Z. 1890, p. 314.

Geodromicus constricticollis, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, p. 172; *G. antennatus*, Circassia, REITTER, t. c. p. 189 : n. spp.

Homalota clancula, characters of sexes; BLATCH, Ent. M. M. (2) i, p. 159. *H. truncata* redescribed; EPPELSHEIM, Deutsche e. Z. 1890, p. 203.

Ischnopoda subenea, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, p. 164, n. sp.

Leptotyphlus cribratus, *grouvellei*, Nice, FAUVEL, Rev. d'Ent. p. 356, n. spp.

Leptusa venusta, Hoch., redescribed; EPPELSHEIM, Wien. ent. Z. ix, p. 161.

L. ludyi, p. 205, *L. (Sipalia) granulicauda*, p. 206, Austria, EPPELSHEIM, Wien. ent. Z. ix, p. 206, n. spp.

Liogluta funesta, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, p. 218, n. sp.

Lomechusa strumosa: habits of larva and its relation to ants; WASMANN, Tijdschr. Ent. xxxiii, pp. 93-96.

Mesotrochus, n. g., near *Holotrochus*, for *M. paradoxus*, n. sp., Blumenau, pl. ii, fig. 7, WASMANN, Deutsche e. Z. 1890, p. 317.

Myrmedonia armifrons, p. 274, *hauseri*, p. 275, Nagpore, EPPELSHEIM, Wien. ent. Z. ix; *M. eppelsheimii*, p. 306, *diabolica*, p. 308, pl. ii, fig. 3, *crinosa*, *granulata*, p. 309, *rugulosa*, *dispar*, p. 310, Blumenau, *gemmata*, Rio Grande do Sul, p. 311, pl. ii, fig. 4, *badariottii*, Rio de Janeiro, p. 312, WASMANN, Deutsche e. Z. 1890 : n. spp.

Ocypus oleus and *tenebricosus*, distinctive characters and synonymy; OTTO, Wien. ent. Z. ix, p. 62. *O. aethiops*, larva described; XAMBEU, Rev. d'Ent. ix, p. 181.

Ædichirus dimidiatus, Nagpore, EPPELSHEIM, Wien. ent. Z. ix, p. 280, n. sp.

Oxysoma aleocharina, Caucasus, REITTER, Deutsche e. Z. 1890, p. 166, n. sp.

Oxytelus elegans, Denmark, MEINERT, Ent. Med. ii, p. 257, n. sp.

Pæderus syriacus, Reit., and *mesopotamicus*, Epp., are one species; REITTER, Wien. ent. Z. ix, p. 14.

Philonthus convalescens, Simla, p. 276, *cliens*, Nagpore, p. 277, EPPELSHEIM, Wien. ent. Z. ix, n. spp.

Pinophilus bomfordi, Nagpore, EPPELSHEIM, Wien. ent. Z. ix, p. 279, n. sp.

Quedius tristis, pupa described; LESNE, p. 179, Ann. Soc. Ent. Fr. (6) x.

Q. (Ediquus) heterodoxus, Bohemia, p. 208, *Q. (Microsaurus) mixtus*, Lenkoran, p. 222, *scutellaris*, Tunis, p. 224, EPPELSHEIM, Wien. ent. Z. ix, n. spp.

Scimbalium indicum, Nagpore, EPPELSHEIM, Wien. ent. Z. ix, p. 278, n. sp.

Sipalia laticornis, E. Pyrenees, FAUVEL, Rev. d'Ent. ix, p. 184 (larva, XAMBEU, t. c. p. 183) : n. sp.

Staphylinus arrosus, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, p. 169, n. sp.

Stenus suramensis, n. var. *confrater*, EPPELSHEIM, Wien. ent. Z. ix, p. 227.

Stenus coarcticollis, p. 170, *denticulatus*, p. 225, *ignotus*, p. 226, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, n. spp.

Sumius setulosus, N. Africa, WASMANN, Deutsche e. Z. 1890, p. 304, n. sp.

Tachinus laciniatus, p. 166, *lederi*, p. 168, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, n. spp.

Trogophlæus (Carpalineus) pilosellus, p. 228, *T. (Tanosoma) apicalis*, p. 229, Caucasus, EPPELSHEIM, Wien. ent. Z. ix, n. spp.

Xenocephalus schuppîi, Rio Grande do Sul, WASMANN, Deutsche e. Z. 1890, p. 315, pl. ii, fig. 6, n. sp.

PSELAPHIDÆ.

[Cf. BLACKBURN (64), BRENDL & WICKHAM (84), BROUN (95), GUILLEBEAU (332), HALBHERR (345), HEYDEN (361), RAFFRAY (631, 632, 633), REITTER (648, 657), SCHAUFUSS (726, 727), WASMANN (880).]

System of classification ; SCHAUFUSS (727).

For descriptions of new genera and species found in amber on the coasts of the Baltic, see Palæo-entomology, p. 79.

Revision of the family, with morphological sketch, new classification and tabulation of the genera ; RAFFRAY, Rev. d'Ent. ix. This includes many synonymical and other observations which it would be superfluous to reproduce in detail here, as the work must be consulted by all students. Only the new generic names and the new species are noticed below ; the latter are limited to the species serving as types of the new genera.

Abryxis, n. g., for *Bryaxis denticornis*, *subcarinata*, and *separabilis*, Schf. ; RAFFRAY, Rev. d'Ent. ix, p. 119 (cf. *Byraxis*, *infra*).

Achilia, n. n. for *Byraxis*, Raffr., *nec* Reitt. ; REITTER, Wien. ent. Z. ix, p. 212.

Adrocerus, n. g., p. 131, for *A. cavicornis*, n. sp., Brazil, p. 208, pl. ii, fig. 50 ; RAFFRAY, Rev. d'Ent. ix.

Adrogaster, n. g., p. 94, for *A. longipennis*, n. sp., Rio Grande, p. 195, pl. ii, fig. 5 ; RAFFRAY, Rev. d'Ent. ix.

Amana, n. g., p. 109, for *A. crassicornis*, n. sp., Singapore, p. 203, pl. ii, fig. 28 ; RAFFRAY, Rev. d'Ent. ix.

Anuclaviger, n. g. (*Clavigerides*), p. 163, for *A. sinuaticollis*, n. sp., Singapore, p. 216, pl. iii, fig. 21 ; RAFFRAY, Rev. d'Ent. ix.

Anarmodius, n. g., for *Trichonyx gibbus*, Schf. ; RAFFRAY, p. 103, Rev. d'Ent. ix.

A. bifoveatus, Venezuela, RAFFRAY, p. 307, Ann. Soc. Ent. Fr. (6) x, n. sp.

✓ *Anops*, n. g., near *Amaurops*, for *A. amblyoponica*, n. sp., Pennsylvania ; BRENDÉL, Bull. Lab. Iowa, ii, p. 80.

✓ *Apharinodes*, n. g., p. 135, for *A. squamosa*, n. sp., Singapore, p. 210, pl. ii, fig. 40 ; RAFFRAY, Rev. d'Ent. ix.

Apharus armipes, Venezuela, RAFFRAY, p. 318, Ann. Soc. Ent. Fr. (6) x, n. sp.

✓ *Apoptectus*, n. g., p. 96, for *Euplectus crassipes*, Raffr. ; RAFFRAY, Rev. d'Ent. ix.

✓ *Arachis*, n. g., for *Batrisomorpha crassicornis*, Raff. ; RAFFRAY, p. 117, Rev. d'Ent. ix.

Arhytodes oberthuri, pl. vi, fig. 9, p. 327, *margaritaceus*, fig. 11, p. 328, *rubripennis*, fig. 12, p. 329, Venezuela, RAFFRAY, Ann. Soc. Ent. Fr. (6) x, n. spp.

✓ *Articerodes*, n. g., p. 164, for *Articerus syriacus*, Saulcy ; RAFFRAY, p. 164, Rev. d'Ent. ix.

Articerus asper, Adelaide, BLACKBURN, Tr. R. Soc. S. Austr. xii, p. 138, n. sp.

✓ *Barada*, n. g., p. 314, for *B. mucronata*, pl. vi, fig. 8, n. sp., Venezuela ; RAFFRAY, Ann. Soc. Ent. Fr. (6) x.

✓ *Batrisodema*, n. g., p. 109, for *B. tuberculata*, n. sp., Singapore, p. 200, pl. ii, fig. 11 ; RAFFRAY, Rev. d'Ent. ix.

Batrissus furcatus, Pennsylvania, BRENDÉL, Bull. Lab. Iowa, ii, p. 82 ; *B. elevatus*, pl. vi, fig. 6, *lamellatus*, p. 308, *longipennis*, p. 309, Venezuela, RAFFRAY, Ann. Soc. Ent. Fr. (6) x : n. spp.

✓ *Brabazys*, n. g., for *Bryaxis fonensis*, *siamensis*, Schf. ; RAFFRAY, Rev. d'Ent. ix, p. 119.

Bryaxis narentina, Herzegovina, REITTER, Wien. ent. Z. ix, p. 191 ; *B. valida*, p. 273, *elegans*, p. 276, *bicolor*, p. 294, N. America, BRENDÉL, Bull. Lab. Iowa, i ; *B. (Reichenbachia) cullosa*, p. 311, *aubeana*, *estebanensis*, p. 312, Venezuela, RAFFRAY, Ann. Soc. Ent. Fr. (6) x ; *B. munroi*, p. 231, *forficulida*, p. 232, *foveatissima*, p. 233, New Zealand, BROWN, Tr. N. Z. Inst. xxii : n. spp.

Byrazis, Reitt., = (*Abryaxis*, Raffr.) ; REITTER, Wien. ent. Z. ix, p. 212.

Bythinus baudueri, *latebrosus*, *blandus*, note on, CROISSANDEAU, Deutsche e. Z. 1890, p. 287. *B. baudueri*, *latebrosus*, *blandus*, distinctions of ; REITTER, Wien. ent. Z. ix, p. 16.

B. lagari, Lagarina Valley, HALBHERR (345) ; *B. amasiae*, Asia Minor, p. 373, *schneideri*, San Remo, p. 386, REITTER, Deutsche e. Z. 1890 : n. spp.

Centrophthalmus communis, Madagascar, SCHAUFUSS, Ent. Nachr. xvi, p. 139, n. sp.

Cercocerus germaini, Matto Grosso, RAFFRAY, p. 213, pl. iii, fig. 9, Rev. d'Ent. ix, n. sp.

✓ *Ceroderma*, n. g., p. 108, for *C. asperata*, n. sp., Pulo-Penang, p. 127 ; RAFFRAY, Rev. d'Ent. ix.

Clavigeridae : remarks on structure and habits ; WASMANN (880).

- Claviger araxidis*, Ordubad, REITTER, p. 190, Wien. ent. Z. ix, n. sp.
- ✓ *Commatoceropsis*, n. g., for *Commatocerus madagascariensis*, Raff.; RAFFRAY, p. 164, Rev. d'Ent. ix.
- ✓ *Cratna*, n. g., p. 109, for *C. torticornis*, n. sp., Singapore, p. 202, pl. ii, fig. 10; RAFFRAY, Rev. d'Ent. ix.
- Cryptorhinula longiclava*, Brazil, RAFFRAY, Rev. d'Ent. ix, p. 205, pl. ii, fig. 32; *C. longiceps*, Venezuela, *id.*, p. 313, Ann. Soc. Ent. Fr. (6) x : n. spp.
- ✓ *Ctenisis*, n. g., for *Ctenistes equinoctialis*, Aub., and *Desimia dispar*, Shp.; RAFFRAY, p. 141, Rev. d'Ent. ix.
- ✓ *Ctenisomorphus*, n. g., for *Ctenistes major*, Raff.; RAFFRAY, p. 140, Rev. d'Ent. ix.
- Ctenistes adelaidæ*, p. 136, *tenebricosus*, p. 137, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xii, n. spp.
- Cyathiger impar*, Singapore, RAFFRAY, Rev. d'Ent. ix, p. 209, pl. ii, fig. 46, n. sp.
- Dalmodes ensipes*, Venezuela, RAFFRAY, p. 316, Ann. Soc. Ent. Fr. (6) x, n. sp.
- ✓ *Dalmoplectus*, n. g., for *Dalmodes rybaxoides*, Reitt.; RAFFRAY, p. 96, Rev. d'Ent. ix.
- Decarthron discolor*, New Mexico, BRENDEN, Bull. Lab. Iowa, i, p. 265, n. sp.
- ✓ *Didimoprora*, n. g., for *Tyrus victoria*, King; RAFFRAY, p. 148, Rev. d'Ent. ix.
- ✓ *Eubatrisus*, n. subg. of *Batrisus*, RAFFRAY, p. 110, Rev. d'Ent. ix.
- Euphalepsus rugipes*, p. 309, *cruralis*, pl. 6, fig. 7, p. 310, Venezuela, RAFFRAY, Ann. Soc. Ent. Fr. (6) x, n. spp.
- ✓ *Euplectopsis*, n. g., for *Trichonyx microcephalus*, Reitt.; RAFFRAY, Rev. d'Ent. ix, p. 46.
- Eurhexius crassicornis*, Venezuela, RAFFRAY, p. 306, Ann. Soc. Ent. Fr. (6) x, n. sp.
- ✓ *Fustigeropsis*, n. g., for *Commatocerus peringueyi*, Raff.; RAFFRAY, p. 164, Rev. d'Ent. ix.
- Globa brevicornis*, Venezuela, RAFFRAY, p. 314, Ann. Soc. Ent. Fr. (6) x, n. sp.
- Goniacerus anophthalmus*, Brazil, RAFFRAY, p. 207, pl. ii, fig. 49, Rev. d'Ent. ix; *G. perforatus*, Venezuela, *id.*, p. 317, Ann. Soc. Ent. Fr. (6) x : n. spp.
- Goniastes westwoodi*, Brazil, RAFFRAY, Rev. d'Ent. ix, p. 209, pl. ii, fig. 51, n. sp.
- Hamotus crassipalpus*, p. 320, *soror*, *cavipalpus*, p. 321, *vesiculifer*, p. 322, *inflatus*, p. 323, *H. (Hamatoides) reichèi*, *flavopilosus*, p. 325, Venezuela, RAFFRAY, Ann. Soc. Ent. Fr. (6) x, n. spp.
- ✓ *Jubomorphus*, n. g. *Faroniui*, for *J. simoni*, pl. vi, fig. 2, n. sp., Venezuela, RAFFRAY, p. 299, Ann. Soc. Ent. Fr. (6) x.
- Jubus caviventris*, p. 301, *abbreviatus*, p. 302, *punctulatus*, *lætus*, p. 303, Venezuela, RAFFRAY, Ann. Soc. Ent. Fr. (6) x, n. spp.

Lasinus mandarinus, Tonkin, RAFFRAY, p. 212, pl. iii, fig. 16, Rev. d'Ent. ix, n. sp.

✓ *Macharodes*, n. g., for *Tychus bythinoides*, and *Bythinus carinatus*, Brend.; BRENDÉL, Bull. Lab. Iowa, i, p. 252.

✓ *Macta*, n. g., pp. 85 & 87, for *M. constricta*, n. sp., Brazil, p. 193; RAFFRAY, Rev. d'Ent. ix.

Mastiger brevicornis, Singapore, RAFFRAY, p. 216, pl. iii, fig. 22, Rev. d'Ent. ix, n. sp.

✓ *Mesoplatus*, n. g., for *Batrissus barbatus*, King; RAFFRAY, p. 103, Rev. d'Ent. ix.

✓ *Mina*, n. g., p. 108, for *M. elegans*, n. sp., Singapore, p. 200, pl. ii, fig. 15, RAFFRAY, Rev. d'Ent. ix.

✓ *Mitracephala*, n. g., p. 104, for *M. longipennis*, n. sp., Brazil, p. 198, pl. ii, fig. 8, RAFFRAY, Rev. d'Ent. ix.

✓ *Neodalmus*, n. g., *Euplectini*, for *N. carinatus*, pl. 6, fig. 4, n. sp., Venezuela; RAFFRAY, Ann. Soc. Ent. Fr. (6) x.

✓ *Obricala*, n. g., p. 117, for *Batrissomorpha foveicollis*, Raffr.; RAFFRAY, Rev. d'Ent. ix.

✓ *Oxyomera*, n. g., p. 109, for *O. denticollis*, n. sp., Singapore, p. 203, pl. ii, fig. 16; RAFFRAY, Rev. d'Ent. ix.

✓ *Palimbolus*, n. g., for *Tyrus mirandus*, Shp.; RAFFRAY, p. 149, Rev. d'Ent. ix.

✓ *Patranus*, n. g., for *Tychus politus*, Schf.; RAFFRAY, p. 118, Rev. d'Ent. ix.

✓ *Pedinopsis*, n. g., for *Euplectus major*, Raffr.; RAFFRAY, Rev. d'Ent. ix, p. 96.

✓ *Phalespöides*, n. g., p. 111, for two nondescript species from Brazil; RAFFRAY, Rev. d'Ent. ix.

Phthartomicrus pubescens, Singapore, RAFFRAY, Rev. d'Ent. ix, p. 194, pl. ii, fig. 4, n. sp.

✓ *Phlegnomus*, n. g., p. 104, for *P. oberthuri*, n. sp., Amazons, p. 198, pl. ii, fig. 7; RAFFRAY, Rev. d'Ent. ix.

✓ *Physa*, n. g., for *Bryaxis inflata*, Shp.; RAFFRAY, p. 118, Rev. d'Ent. ix.

✓ *Probatrisus*, n. subg. of *Batrissus*; RAFFRAY, p. 110, Rev. d'Ent. ix.

✓ *Prophilus*, n. g., p. 94, for *P. minutus*, n. sp., Singapore, p. 195, pl. ii, fig. 14; RAFFRAY, Rev. d'Ent. ix.

✓ *Propectus*, n. g., p. 104, for *P. decipiens*, n. sp., California, p. 197; RAFFRAY, Rev. d'Ent. ix.

✓ *Prorhexius*, n. g., p. 103, for *P. sylvaticus*, n. sp., N. America, p. 197; RAFFRAY, Rev. d'Ent. ix.

Pselaphomorphus longiceps, Brazil, RAFFRAY, Rev. d'Ent. ix, p. 193, pl. ii, fig. 1; *P. microphthalmus*, pl. vi, fig. 1, *muticus*, Venezuela, RAFFRAY, p. 298, Ann. Soc. Ent. Fr. (6) x : n. spp.

✓ *Pselaphophus*, n. subg. of *Pselaphus*; RAFFRAY, p. 137, Rev. d'Ent. ix.

✓ *Pselaphoxys*, n. subg. of *Pselaphus*; RAFFRAY, p. 137, Rev. d'Ent. ix.

† *Pselaptrichus*, n. g., near *Machærites*, for *P. tuberculipalpus*, n. sp., California, pl. vii, fig. 24 ; BRENDÉL, Bull. Lab. Iowa, i.

Pselaptus calcaratus, Venezuela, RAFFRAY, p. 315, Ann. Soc. Ent. Fr. (6) x, n. sp.

† *Pseudaphadrina*, n. g., for *Filiger prima*; Reitt. ; RAFFRAY, p. 134, Rev. d'Ent. ix.

† *Pseudohamotus*, n. g., p. 148, for *P. inflatipalpus*, n. sp., Brazil, p. 213, pl. iii, fig. 6 ; RAFFRAY, Rev. d'Ent. ix.

† *Pseudophanias*, n. g., p. 150, for *P. malaianus*, n. sp., Pulo Penang, p. 214, pl. iii, fig. 1 ; RAFFRAY, Rev. d'Ent. ix.

† *Pseudotyrus*, n. g., p. 146, for *P. corticalis*, n. sp., Singapore, p. 215, pl. iii, fig. 18 ; RAFFRAY, Rev. d'Ent. ix.

† *Pteracmes*, n. g., p. 95, for *P. schaufussi*, n. sp., Chili, p. 196, pl. ii, fig. 25 ; RAFFRAY, Rev. d'Ent. ix.

† *Rabydis*, n. subg. of *Bryaxis*, p. 119, with *B. (R.) striolata*, n. sp., Madagascar, p. 205, RAFFRAY, Rev. d'Ent. ix.

Raphitreus dentimanus, Annam, RAFFRAY, p. 211, pl. iii, fig. 3, Rev. d'Ent. ix, n. sp.

† *Reitteronymus*, n. g., for *Trichonyx longicollis*, Reitt. ; RAFFRAY, p. 104, Rev. d'Ent. ix.

† *Rhexinia*, n. g., p. 103, for *R. angulata*, n. sp., New Grenada, p. 196, pl. iii, fig. 35 ; RAFFRAY, Rev. d'Ent. ix.

Sathyles vespertinus, Pulo Penang, RAFFRAY, Rev. d'Ent. ix, p. 204, n. sp.

† *Sebaga*, n. g., *Faronini*, for *S. centralis*, pl. vi, fig. 3, n. sp., Venezuela ; RAFFRAY, Ann. Soc. Ent. Fr. (6) x.

Sognorus heydeni, Asia Minor, REITTER, Deutsche e. Z. 1889, p. 373, n. sp.

† *Tanypleurus*, n. g., p. 127, for *T. malaianus*, n. sp., Singapore, p. 206, pl. ii, fig. 45 ; RAFFRAY, Rev. d'Ent. ix.

† *Trabisus*, n. subg. of *Batrisus* ; RAFFRAY, p. 110, Rev. d'Ent. ix.

† *Trichonomorphus*, n. g., p. 109, for *T. ursinus*, n. sp., Pulo Penang, p. 201, pl. ii, fig. 9 ; RAFFRAY, Rev. d'Ent. ix.

† *Trimiomorphus*, n. g., p. 93, for *T. elongatus*, n. sp., Singapore, p. 194, pl. ii, fig. 12 ; RAFFRAY, Rev. d'Ent. ix.

† *Trimiopectus*, n. g., for part of *Euplectus*, with *T. obsoletus*, n. sp., Iowa, pls. xi, fig. 105, & xii, fig. 123 ; BRENDÉL, Bull. Lab. Iowa, ii.

Trimioptis fleutiauxi, Guadeloupe, RAFFRAY, p. cciv, Bull. Soc. Ent. Fr. 1890, n. sp.

Trimium raffrayi, Adelsberg, GUILLEBEAU, Rev. d'Ent. ix, p. 32, n. sp.

Tychus fourrieri = (*olbiensis*) ; GUILLEBEAU, Rev. d'Ent. ix, p. 33.

Tyrus mucronatus n. var. *costatus* ; FLEISCHER, p. 86.

Tyrus elongatus, Arizona, BRENDÉL, Bull. Lab. Iowa, i, p. 239, pl. vi, fig. 21, n. sp.

† *Xerhius*, n. g., near *Rhexius*, p. 305, for *X. cordicollis*, pl. vi, fig. 5, n. sp., Venezuela ; RAFFRAY, Ann. Soc. Ent. Fr. (6) x.

PAUSSIDÆ.

[*Cf.* DOHRN (178, 180), POLL (612).]

Remarks on structures and relations to Ants ; WASSMANN (880).

Merismoderus hamaticornis, Sumatra, POLL, Notes Leyd. Mus. xii, p. 1, n. sp.

Paussus smithi, *concolor*, and *lafertei*, notes on ; DOHRN, S. E. Z. li, p. 246.

P. elaphus, *dama*, p. 1, *sikoranus*, p. 82, Madagascar, DOHRN, S. E. Z. li, n. spp.

Platyrhopalus macrophyllus, Java, POLL, Notes Leyd. Mus. xii, p. 3, n. sp.

SCYDMÆNIDÆ.

[*Cf.* BLATCH (68), CROISSANDEAU (155), HALBHERR (345), REITTER (648), REITTER & CROISSANDEAU (670), SAULCY (720).]

Cephemium (*Geodytes*) *theryanum*, Algeria, REITTER, Deutsche e. Z. 1890, p. 387, n. sp.

Chevolatia grouvellei, Mexico, CROISSANDEAU, p. clvi, Bull. Soc. Ent. Fr. 1890, n. sp.

Euconus (*Tetramelus*) *longulus*, Lagarina Valley ; HALBHERR (345) ; *E. providus*, *ovipennis*, *pachyscelis*, *abnormis*, *latipennis*, *fugitor*, *fimidus*, p. 216, *excedens*, *eumicriformis*, *lepidus*, *pauper*, *incompletus*, *lothari*, *hetschkoi*, *permodicus*, p. 217, *permixtus*, *vestitus*, *contractus*, *constrictus*, *eques*, *clanculus*, *carinangulus*, p. 218, *subcompressus*, *pinguiculus*, *aridulus*, *depressus*, *spatulus*, *arionis*, *tritonus*, *gibbium*, *exul*, *minimus*, *fimbriatulus*, p. 219, Brazil, REITTER & CROISSANDEAU, Nat. Sicil. ix : n. spp.

Eudesis, characters of ; REITTER, Deutsche e. Z. 1890, p. 387.

E. sulcipennis, Algeria, REITTER, l. c. ; *E. adela*, Pyrenees, SAULCY, Bull. Soc. Ent. Fr. (6) x, p. xxxiv : n. spp.

Homocoonus armipes, Brazil, REITTER & CROISSANDEAU, Nat. Sicil. ix, p. 220, n. sp.

Neuraphes delphinus, *georgicus*, ♂ described, REITTER, Deutsche e. Z. 1890, p. 146. *N. coronatus*, Sahl., = (*conifer*, Fauv.), REITTER, Wien. ent. Z. ix, p. 102.

N. felicie, Caucasus, REITTER, Deutsche e. Z. 1890, p. 145 ; *N. planifrons*, England, BLATCH, Ent. M. M. (2) i, p. 93 : n. spp.

Scydmaenus (*Eumicrus*) *dilatatus*, *longicornis*, *denticornis*, *angustus*, Brazil, REITTER & CROISSANDEAU, p. 220, Nat. Sicil. ix, n. spp.

SILPHIDÆ.

[*Cf.* FLEISCHER (265), HALBHERR (345), HEYDEN (360), JAKOWLEFF (402), REITTER (645, 648, 657), UHAGON (854).]

Fossil *Silphidæ*, FLACH (260), and palæo-entomology, p. 80.

Bathyscia likanensis, Croatia, REITTER, Wien. ent. Z. ix, p. 191 ; *B. ligurica*, *robiati*, Italy, REITTER, Ann. Mus. Genov. (2) vii, p. 293 : n. spp.

Blitophaga calva, Turkestan, REITTER, Deutsche e. Z. 1890, p. 357, n. sp.

Catops fulvus, Genoa, REITTER, Ann. Mus. Genov. (2) vii, p. 294 ; *C. ruthenus*, Bukowina, REITTER, Deutsche e. Z. 1890, p. 146 : n. spp.

Catopsimorphus brevicollis and *rougeti*, distinctions of ; FAUVEL, Rev. d'Ent. ix, p. 346.

Choleva spinipennis, Germany, REITTER, Deutsche e. Z. 1890, p. 167 ; *C. biharica*, Centr. Europe, FLEISCHER, p. 87, Verh. Ver. Brünn. xxvii : n. spp.

Liodes and *Anisotoma*, note on the application of the names ; REITTER, Wien. ent. Z. ix, p. 120.

Liodes humeralis and *axillaris*, distinctions of ; GUILLEBEAU, Rev. d'Ent. ix, p. 224.

L. montana, Lagarina Valley, HALBHERR (345) ; *L. imeretina*, Caucasus, REITTER, Deutsche e. Z. 1890, p. 388 ; *L. cyrtusula*, Lower Austria, REITTER, Wien. ent. Z. p. 192 : n. spp.

Pseudopelta pilosa, Amdo, JAKOWLEFF, p. 258, Hor. Ent. Ross. xxiv, n. sp.

Ptomaphagus marginicollis and allies, synonymical note ; FAUVEL, p. 347, Rev. d'Ent. ix.

P. rosenhaueri, S. Spain, UHAGON, An. Soc. Esp. xix, p. 44, n. sp.

HISTERIDÆ.

[Cf. CASEY (122), LEWIS (486), REITTER (648), SCHMIDT (738, 739, 740, 741).]

✓ *Botrodes*, n. g. (*Murmidiini*), p. 319, for *B. estriatus*, n. sp., Texas, p. 320 ; CASEY, Ann. N. York Ac. v.

✓ *Dendrophilopsis*, n. g. for *Hister pusio*, Men. ; SCHMIDT, p. 11, Hor. Ent. Ross. xxiv.

Epiurus delaunayi, Cambodia, LEWIS, Ent. M. M. (2) i, p. 106 ; *E. (Stictostix) biseriatus*, Australia, SCHMIDT, Ent. Nachr. xvi, p. 39 : n. spp.

Hister distans, Fisch. = (*dauricus*, Mars., *atramentarius*, Suff.), p. 6, *planulus*, Men., = (*laco*, Mars.), p. 9, *peyroni*, characters and synonymy noticed, p. 9 ; SCHMIDT, Hor. Ent. Ross. xxiv.

H. solskyi, p. 5, *lævifossa*, p. 7, Turkestan, SCHMIDT, Hor. Ent. Ross. xxiv, n. spp.

✓ *Lapethus*, n. g. (*Murmidiini*), p. 317, for *L. discretus*, n. sp., California, p. 318, CASEY, Ann. N. York Ac. v.

Monoplus pinguis, Lew., = (*Saulister singularis*, Pering.) ; LEWIS, Ent. M. M. (2) i, p. 106.

Murmidiini referred to *Colydiidæ* ; CASEY, Ann. N. York Ac. v, p. 309.

Onthophilus caucasicus, Caucasus, REITTER, Deutsche e. Z. 1890, p. 389, n. sp.

Pelorurus formosus, Abyssinia, SCHMIDT, Ent. Nachr. xvi, p. 41, n. sp.

Phelister balzanii, Argentine Rep., SCHMIDT, Ann. Mus. Genov. (2) vii, p. 112, n. sp.

Platysoma hageni, confucii; synonymy discussed, p. 13, *sundæ*, characters of, p. 14; SCHMIDT, Notes Leyd. Mus. xii, p. 14.

P. theryana, Algeria, REITTER, Deutsche e. Z. 1890, p. 168, n. sp.

Saprinus ornatus, Er., *fasciolatus*, Gebh., *osiris*, Mars., synonymy discussed, p. 13; *nitidulus*, Fab., variation, p. 14; *sparsutus*, Solsky., = (*brunnensis*, Fleisch.), *biterrensis*, Mars., validity maintained, p. 15; SCHMIDT, Hor. Ent. Ross. xxiv.

S. strigicollis, p. 17, *akinini*, p. 19, Kirghisia, SCHMIDT, Hor. Ent. Ross. xxiv; *S. funereus*, Haifa, *hilaris*, Egypt, p. 82, *japhonis*, Jaffa, *pretiosus*, Abyssinia, p. 83, *æneovirens*, Somali-land, p. 84, *suspectus*, Egypt, p. 85, *palæstinensis*, Nazarus, *baudii*, Cyprus, p. 86, *splendidulus*, Senegal, p. 87, SCHMIDT, Deutsche e. Z. 1890; *S. purpuricollis*, Angola, *hamatus*, p. 42, *disnexus*, p. 43, *arcipygus*, p. 44, *parenthesis*, Brazil, *auctus*, Amazons, p. 45, *latimanus*, Brazil, p. 50, *sulcatulus*, California, p. 51, *lewisii*, p. 52, *subæneus*, p. 53, Japan, *acridens*, Zanzibar, p. 54, *varians*, China, Japan, p. 55, SCHMIDT, Ent. Nachr. xvi: n. spp.

Satrapes sartorii and *reitteri*, distinctive characters of; REITTER, Wien. ent. Z. ix, p. 13.

Tribalus rubriculus, Abyssinia, SCHMIDT, Ent. Nachr. xvi, p. 40, n. sp.

PHALACRIDÆ.

[Cf. FLACH (259).]

Phalacrus frater, Caucasus, FLACH, p. 78, Verh. Ver. Brünn. xxvii, n. sp.

Olibrus reitteri, Croatia, *fallax*, Austria, p. 71, *dohrni*, Turkestan, p. 74, FLACH, Verh. Ver. Brünn. xxvii, n. spp.

NITIDULIDÆ.

[Cf. GROUVELLE (326, 328), REITTER (648, 657), SHARP (317).]

Æthina argus, Tenasserim, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 125, n. sp.

Amphicrossus plagiatus, Burma, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 125, n. sp.

Axyra fœæ, Burma, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 122, n. sp.

† *Cacconia*, n. g. near *Soronia*, for *C. obscura*, n. sp., Mexico, pl. x, fig. 19; SHARP, p. 324, Biol. Centr. Am. Col. ii (1).

Camptodes (*Eucamptodes*) *principalis*, Mexico, p. 327, *championi*, Guatemala, *formosus*, Central America, pl. x, fig. 20, p. 328, *gaumeri*, fig. 21, p. 330, *cinctipennis*, Guatemala, *godmani*, Panama, p. 331, *divisus*, Centr. and S. America, *flohri*, Mexico, p. 332, *politus*, Guatemala, *nigriclava*, fig. 22, Centr. and S. America, *decipiens*, Panama, p. 333, *aberrans*, fig. 23, Mexico, p. 334, *C. jucundus*, *solitarius*, fig. 24, p. 335, Guatemala, *melanopterus*, Mexico, p. 336, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Carpophilus feæ, Burma, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 120, n. sp.

Cryptarcha dubia, Burma, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 126, n. sp.

Cybocephalus obliquestriatus, Buda-Pest, REITTER, Deutsche e. Z. 1890, p. 146, n. sp.

Epurea integra figured, pl. x, fig. 1 ; Biol. Centr. Am. Col. ii (1).

E. mexicana, torticollis, pl. ix, fig. 25, Mexico, p. 307, *soror*, p. 308, *alticola, proliza*, pl. x, fig. 2, Guatemala, p. 308, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

✓ *Eucamptodes*, n. subg. of *Camptodes*, for *C. illustris*, Chev., &c. ; SHARP, p. 327, Biol. Centr. Am. Col. ii (1).

Haptoncura, Reitt., merged in *Haptoncus*, p. 305, *H. luteolus* figured ; Biol. Centr. Am. Col. ii (1).

H. dubitabilis, Tenasserim, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 121, n. sp.

Idathina humeralis, Tenasserim, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 124, n. sp.

Ischæna : table of characters of the species, with *I. angustata*, n. var. *peninsularis* ; GROUVELLE, p. 123, Ann. Mus. Genov. (2) ix.

Lobiopa retusa, Nicaragua, pl. x, fig. 16, p. 321, *cassidoides, simulatrix*, fig. 17, p. 322, *discedens*, fig. 18, p. 323, Central America, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Meligethes aneus, habits of larva ; BOß, Tijdschr. Ent. xxxiii, p. cxiii.

Perilopa deplanata, punctigera, pl. x, fig. 14, p. 319, *placida*, fig. 15, p. 320, Panama, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Platychora lebasii figured, pl. x, fig. 11 ; Biol. Centr. Am. Col. ii (1).

Prometopia porcina, pl. x, fig. 8, *æqualis*, fig. 9, *ranca*, p. 316, *soro-nioides*, pl. x, fig. 10, p. 317, Central America ; SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

✓ *Pseudoplatychora*, n. g. for *P. convexiuscula*, n. sp., Sumatra ; GROUVELLE, p. 15, Notes Leyd. Mus. xii : cf. RITSEMA, t. c. p. 31, who sinks the genus as being *Atarphia*, Reitt.

Psilotus atratus figured, pl. x, fig. 12 ; Biol. Centr. Am. Col. ii (1).

P. mimetes, Panama, SHARP, pl. x, fig. 13, p. 318, t. c., n. sp.

Rhizophagus protensus, Armenia, REITTER, Wien. ent. Z. ix, p. 192, n. sp.

Stelidota pallens, pl. x, fig. 3, *solitaria*, p. 311, *ovalis*, fig. 4, *stictica*, p. 312, *bugabensis*, fig. 5, p. 313, *fortis, clavigera, chontalensis*, p. 314, *championi*, fig. 6, *extranea*, fig. 7, p. 315, Central America, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

TROGOSITIDÆ.

[Cf. CASEY (122), LÉVEILLÉ (484, 485).]

Acrops gambeyi, Cochin China, LÉVEILLÉ, p. cvii, Bull. Soc. Ent. Fr. 1890, n. sp.

✓ *Lycoptis*, n. g., p. 311 (where it is placed in *Colydiidæ*, but at page 494 is transferred to *Trogositidæ*), for *L. villosa*, n. sp., S. Carolina, p. 312 ; CASEY, Ann. N. York Ac. v.

Serrotibia, cf. *Colydiidæ*.

✓ *Temnochilodes*, n. g. for *T. dugesi*, n. sp., Mexico ; LÉVEILLÉ, Bull. Soc. Ent. Fr. 1890, p. clxxxiii.

Thymalus fulgidus, larva described ; BEUTENMÜLLER, Ent. Am. vi, p. 57.

COLYDIIDÆ.

[Cf. BEDEL (41), CASEY (122), REITTER (652).]

Agelandia merkliana, Constantinople, REITTER, Wien. ent. Z. ix, p. 210, n. sp.

Cerylon californicum, California, CASEY, Ann. N. York Ac. v, p. 316, n. sp.

Lasconotus pertenuis, p. 313, *nucleatus*, p. 314, *apicalis*, California, *concavus*, New Mexico, p. 315, CASEY, Ann. N. York Ac. v, n. spp.

✓ *Megataphrus*, n. g., forming a new subfamily, *Megataphrini*, p. 309, for *M. tenuicornis*, n. sp., California, p. 310 ; CASEY, Ann. N. York Ac. v.

Orthocerus (*Sarrotrium*) *funicornis*, Oran, BEDEL, p. cxxxv, Bull. Soc. Ent. Fr. 1890, n. sp.

Philothermus, Aubé, = (*Ectomicrus*, Shp.) ; REITTER, Wien. ent. Z. ix, p. 264.

Serrotibia, Reitt., = (*Paralindria*, Oll.) ; REITTER, Wien. ent. Z. ix, p. 264.

CUCUJIDÆ.

[Cf. CASEY (122), GROUVELLE (326, 329), GUILLEBEAU (333), REITTER (661), SCUDDER (754).]

Classification of the family discussed, *Colydiinæ*, *Monotominæ*, *Rhyssodinae*, *Lyctinæ* being included ; CASEY, p. 496, Ann. N. York Ac. v.

Hopliota atrata, Madagascar, GROUVELLE, Bull. Soc. Ent. Fr. 1890, p. xcii, n. sp.

Laemophlaus juniperi, larva described ; GROUVELLE, p. cxxv, Bull. Soc. Ent. Fr. 1890.

Narthecius simulator, p. 322, California, *breviceps*, p. 323, Florida, CASEY, Ann. N. York Ac. v, n. spp.

✓ *Planismus*, n. g., *Silvaninæ*, p. 500, for *P. floridanus*, n. sp., Florida, p. 501, CASEY, Ann. N. York Ac. v.

Silvanus, characters of *surinamensis* and allies ; GUILLEBEAU, Rev. d'Ent. ix, pp. 220-223.

S. abeillei, Palestine, GUILLEBEAU, t. c. p. 222 ; *S. fauveli*, Syria, REITTER, Wien. ent. Z. ix, p. 256 : n. spp.

Telephanus armatus, Madagascar, GROUVELLE, Ann. Mus. Genov. (2) ix, p. 127, n. sp.

CRYPTOPHAGIDÆ, LATHRIDIDÆ, THORICTIDÆ.

[Cf. FLEISCHER (265), HEYDEN (360), REITTER (648, 652), WASMANN (883).]

Cænoscelis fleischeri, Centr. Europe, REITTER, p. 88, Verh. Ver. Brünn. xxvii, n. sp.

Cryptophagus hauseri, Turkestan, REITTER, Deutsche e. Z. 1890, p. 358, n. sp.

Cartodere elegantula, Ordubad, REITTER, Deutsche e. Z. 1890, p. 147, n. sp.

Coluocera attæ, Kr., notes on habits; WASMANN, Deutsche e. Z. 1890, p. 302.

C. ecitonis, Rio de Janeiro, WASMANN, Deutsche e. Z. 1890, p. 302, n. sp.

Merophysia striatella, Crimea, REITTER, Deutsche e. Z. 1890, p. 388, n. sp.

Thorictus seriesetosus, habits; WASMANN, Deutsche e. Z. 1890, p. 301.

DERMESTIDÆ.

[Cf. GESTRO (300), HEYDEN (360).]

Anthrenus pulchellus, Aden, GESTRO, Ann. Mus. Genov. (2) vii, p. 37, n. sp.

Aproprogramme (Megatoma) maculosa, ♀ noticed; REITTER, Wien. ent. Z. ix, p. 15.

Byturus, habits; THOMAS, Ent. Nachr. xvi, p. 310.

Dermestes, note on larvæ of; HELLER, Ent. Nachr. xvi, p. 209.

Psacus attagenoides, noticed; POLL, Tijdschr. Ent. xxxiii, p. xxvii.

Telopes duplex, Turkestan, REITTER, Deutsche e. Z. 1890, p. 359, n. sp.

BYRRHIDÆ.

[Cf. BLACKBURN (64), HALBHERR (345), REITTER (648), SCUDDER (754).]

Byrrhus torrensensis, S. Australia, BLACKBURN, p. 138, Tr. R. Soc. S. Austr. xii, n. sp.

Curimus circassicus, Amuco, REITTER, Deutsche e. Z. 1890, p. 168, n. sp.

Syncalyptra alpina, Lagarina Valley, HALBHERR (345), n. sp.

PARNIDÆ.

[Cf. GROUVELLE (330, 331), KUWERT (466).]

Analytical tables of the European *Parnidæ*; KUWERT, Verh. z.-b. Wien, xl, pp. 14, &c.

Elmis: distinctive notes for some European species; FLACH, Wien. ent. Z. ix, p. 214.

E. rufiventris, p. 23, *lepidopterus*, p. 24, E. Europe, KUWERT, Verh. z.-b.

Wien, xl; *H. capensis, incerta, georyssoides*, Cape Good Hope, GROUVELLE, p. cexii, Bull. Soc. Ent. Fr. 1890 : n. spp.

Esolus angustatus and *carpetanus*, note on; FLACH, Wien. ent. Z. ix, p. 214.

E. nicariae, Nicaria, *carpetanus*, Spain, p. 25, *czwalinae*, Croatia, *dossowi*, Pyrenees, *brevis*, Sardinia, *politus*, Spain, p. 26, *kuenowi*, Hungary, *perparvulus*, Spain, p. 27, KUWERT, Verh. z.-b. Wien, xl, n. spp.

Lareynia : note on the presumed species; FLACH, Wien. ent. Z. ix, p. 215.

L. interrupta, S. Europe, *longicollis*, p. 28, *croatica, rioloides*, E. Europe, p. 29, *syriaca*, Syria, p. 30, KUWERT, Verh. z.-b. Wien, xl, n. spp.

Limnius formosus, Pyrenees, p. 19, *egyptiacus*, Egypt, p. 20, KUWERT, Verh. z.-b. Wien, xl, n. spp.

Parnoides, n. g., pp. 17 & 53, for *P. pectinicornis*, n. sp., Portugal, p. 53; KUWERT, Verh. z.-b. Wien, xl.

Parnus intermedius, S. Europe, KUWERT, p. 39, Verh. z.-b. Wien, xl; *P. ovatus, parallelus*, Brazil, GROUVELLE, p. cxlvi, Bull. Soc. Ent. Fr. 1890 : n. spp.

Riolus erichsoni, sodalis, nitens, note on characters of; FLACH, Wien. ent. Z. ix, p. 214.

R. seidlitzii, S. France, *sauteri*, Corsica, *steineri*, Spain, p. 32, *erichsoni, lentzi, mulsanti*, Centr. Europe, p. 33, KUWERT, Verh. z.-b. Wien, xl, n. spp.

Stenelmis appfelbeki, Bosnia, KUWERT, p. 36, Verh. z.-b. Wien, xl, n. sp.

HETEROCERIDÆ.

[Cf. HORN (376), KUWERT (467).]

Heterocerus : monograph of the N. American species; HORN, Tr. Am. Ent. Soc. xvii, p. 1.

Table of the European and Mediterranean species of *Heterocerus*; KUWERT, Verh. z.-b. Wien, xl, pp. 517-548.

Heterocerus dentifasciatus, Spain, &c., *damryi*, Corsica, p. 542, *heydeni*, Turkestan, *appfelbeki*, Dalmatia, p. 543, KUWERT, Verh. z.-b. Wien, xl; *H. gemmatus*, p. 9, *schwarzi*, p. 11, N. America, HORN, Tr. Am. Ent. Soc. xvii : n. spp.

Taenheterocerus, n. subg., p. 528, for many species of *Heterocerus*, including the following new spp. : *nebulosus*, Turkestan, *sulcatus*, p. 544, *mendax, coxapilus*, Spain, *panormitanus*, Sicily, p. 545, *ragusæ*, Sicily, *britannicus*, Britain, p. 546, *similis*, Croatia, *siculus*, Sicily, p. 547, *oblongulus*, Croatia, p. 548, KUWERT, Verh. z.-b. Wien, xl, n. spp.

LUCANIDÆ.

[Cf. DUVIVIER (201), WATERHOUSE (888).]

Ægus rœpstorffi, Andaman Is., *curtisii*, Sumatra, p. 36, *parryi*, Borneo, p. 37, *woodfordi*, Solomon Is., p. 38, WATERHOUSE, Ann. N. H. (6) v, n. spp.

- Dorcus parallelopedus*, larva and pupa ; PLANET, Le. Nat. xii. p. 156.
Eurytrachelus elaphus, Herbst, synonymy and habitat ; POLL, Notes Leyd. Mus. xii, p. 28. *Lucanus elaphus*, Herbst, synonymical note ; ALBERS, Deutsche e. Z. 1890, p. 88.
Lucanus laminifer, Assam, WATERHOUSE, Ann. N. H. (6) v, p. 33, figured, Aid, pl. clxxxvi, figs. 4 & 5, n. sp.
Metopodontus occipitalis and *asteriscus* distinguished ; WATERHOUSE, Ann. N. H. (6) v, p. 35.
M. rapstorffi, Andaman Is., WATERHOUSE, l. c., n. sp.
Nigidius albersi, Congo, DUVIVIER, Ann. Ent. Belg. xxxiv, p. 6 ; *N. divergens*, Lake Nyassa, p. 38, *welwitschii*, Angola, p. 39, WATERHOUSE, Ann. N. H. (6) v : n. spp.
Odontolabis lowei, priodont form, *sommeri*, teledont form, noticed ; POLL, Notes Leyd. Mus. xii, pp. 159 & 160.
Prosopocælus hanningtoni, E. Africa, WATERHOUSE, Ann. N. H. (6) v, p. 34, n. sp.

PASSALIDÆ.

- [Cf. KUWERT (465).]
Passalidæ : Kaup's classification discussed ; KUWERT, Soc. Ent. v, p. 1.
Ciceronius paucipunctus, p. 101, *schræderi*, p. 102, Madagascar, KUWERT, Deutsche e. Z. 1890, n. spp.
Erionomus studti, Madagascar, KUWERT, p. 103, Deutsche e. Z. 1890, n. sp.
Passalus stanleyi, Congo, KUWERT, Deutsche e. Z. 1890, p. 99, n. sp.
Paxilloides, n. g., p. 97, for *P. schmidtii*, p. 97, *philippinensis*, p. 98, Philippines, n. spp. ; KUWERT, Deutsche e. Z. 1890.
Veturius sinuaticollis, Costa Rica, p. 99, *similior*, S. America, p. 100, *pumilio*, Brazil, p. 102, *gabonis*, Africa, p. 103, KUWERT, Deutsche e. Z. 1890, n. spp.

SCARABÆIDÆ.

- [Cf. APFELBECK (10), BATES (31, 32), BERGSOE (48), BLACKBURN (58, 59, 60, 61, 62, 63, 65, 66), BOS (75), BRENSKE (85, 86, 87), FAIRMAIRE (238), FRIVALDSZKY (285), HEYDEN (358, 360), JAKOWLEFF (402, 404), KRAATZ (445), NEVINSON (564), NONFRIED (570, 571, 572), OLLIFF (580), REITTER (644, 647, 648, 650, 651, 653, 654, 655, 657, 663, 664), RILEY (694), RIVERS (703), SCHÖNFELDT (749), SCUDDER (754), SEMENOW (770, 771), SHARP (781), WATERHOUSE (890, 891, 893), and *Cetoniini*, p. 126.]

Coprini and *Glaphyrini*.

- Abrognathus*, n. subg. of *Lethrus*, for *L. tuberculifrons*, Ball. ; JAKOWLEFF, p. 563, Hor. Ent. Ross. xxiv.
Ammaciüs elevatus, metamorphoses ; XAMBEU, Rev. d'Ent. ix, p. 61.
Aphengium seminudum, Bates, referred to *Bdelyrus*, WATERHOUSE, p. 379, Ann. N. H. (6) vi.

Amphicoma: tabulation of the species, with a large number of new named varieties; REITTER (647).

A. diadema, Amasia, p. 58, *pulchra*, *dilutipennis*, p. 62, *hybrida*, p. 64, Syria and Asia Minor, REITTER, Deutsche e. Z. 1890, n. spp.

Aphodius bispinifrons, Armenia, &c.; REITTER, p. 103, Verh. Ver. Brünn. xxvii; *A. harpagonis*, Syria, p. 147, *planicollis*, Caucasus, p. 390, *id.*, Deutsche e. Z. 1890: n. spp.

Bolboceras richardsæ, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 159, n. sp.

Coptodactyla baileyi, Queensland, BLACKBURN, p. 1251, P. Linn. Soc. N.S.W. (2), iv, n. sp.

Geotrupes (Phelotrupes) corrugatus, N. China, FRIVALDSZKY, Term. füzetek, xii, p. 198; *G. (Thorectes) brancsiki*, Bosnia, APFELBECK, Soc. Ent. iv, p. 167: n. spp.

Glaphyrus turkestanicus, Turkestan, SEMENOW, p. 196, Hor. Ent. Ross. xxiv, n. sp.

Gymnopleurus calcar, *celebicus*, *dubius*, note on; WATERHOUSE, Ann. N. H. (6) v, p. 410. *G. cærulescens*, n. var. *centralis*; BATES, P. Z. S. 1890, p. 482.

G. plicatulus, Obock, FAIRMAIRE, p. 547, Ann. Soc. Ent. Fr. (6) x; *G. thelwalli*, Lake Nyassa, p. 367, *bocandei*, Senegambia, p. 368, *signaticollis*, Nubia, *reichei*, Abyssinia, p. 369, *jacksoni*, E. Africa, *delagorguei*, Port Natal, p. 370, *inconspicuus*, p. 371, *subtilis*, E. India, *diffinis*, Senegambia, p. 372, WATERHOUSE, Ann. N. H. (6) v; *G. hornei*, India, *singularis*, Corea, p. 410, *assamensis*, India, *brahminus*, China, p. 411, WATERHOUSE, t. c.: n. spp.

(*Heteroplistodus*, n. subg. of *Lethrus*, for *L. (H.) furcatus*, n. sp., Turkestan; JAKOWLEFF, Hor. Ent. Ross. xxiv.

Lethrus, cf. also *Abrognathus* and *Heteroplistodus*.

L. cicatricosus, Askhabad, REITTER, p. 104, Verh. Ver. Brünn. xxvii; *L. conformis*, N. China, FRIVALDSZKY, Term. füzetek, xii, p. 199; *L. bispinus*, Turkestan, p. 259, *potanini*, Mongolia? p. 261, JAKOWLEFF, Hor. Ent. Ross. xxiv; *L. elephas*, Turkey, p. 290, *persicus*, Astrabad, p. 291, *schaumii*, Roumelia, *raymondi*, Asia Minor, p. 293, *tenuidens*, Turkestan, p. 294, REITTER, Deutsche e. Z. 1890: n. spp.

Megathopa virens, Har., var.? described; WATERHOUSE, p. 412, Ann. N. H. (6) v.

M. cupreicollis, Peru, p. 412, *æneicollis*, Brazil, p. 413, WATERHOUSE, t. c., n. spp.

Onthophagus tripolitanus, Tripolis, HEYDEN, Deutsche e. Z. 1890, p. 72; *O. lineatus*, *pseudo-caccobius*, Askhabad, REITTER, p. 102, Verh. Ver. Brünn. xxvii: n. spp.

Pedaria nigra, *cylindrica*, notes on; WATERHOUSE, p. 377, Ann. N. H. (6) vi.

P. tuberculigera, Senegambia, p. 374, *taylori*, Mombas, p. 375, *jacksoni*, Arusha, p. 376, *criberrima*, Old Calabar, p. 377, *alternans*, *puncticollis*, S. Africa, p. 378, WATERHOUSE, Ann. N. H. (6) vi, n. spp.

Phanæus ebeninus, French Guiana, NEVINSON, Ent. M. M. (2) i, p. 315, n. sp.

Pleocomma behrensii, habits, RIVERS, Zoe, i, p. 24, and Ent. Am. vi, p. 70.

Rhyssemus geminatus, Turkestan, *meridionalis*, S. Europe, REITTER, Deutsche e. Z. 1890, p. 391, n. spp.

Scarabæus reichei, Cape Good Hope, p. 365, *anderseni*, Lake Nyassa, *wilsoni*, Persia, p. 366, WATERHOUSE, Ann. N. H. (6) v, n. spp.

Sebateos poggei, Congo, WATERHOUSE, Ann. N. H. (6) v, p. 367, n. sp.

Thorectes fausti, Astrabad, REITTER, Wien. ent. Z. ix, p. 193, n. sp.

Uroxys rodriguezi, Borre, referred to *Chaeridium*; WATERHOUSE, p. 380, Ann. N. H. (6) vi.

Melolonthini and *Euchirini*.

Amphimallus assimilis, varieties noticed; BRENSKE, Ent. Nachr. xvi, p. 13.

Ancistrosoma vittigerum, Er., and *flavovittatum*, Bl., distinctive characters; BRENSKE, Wien. ent. Z. ix, p. 138.

A. baueri, Nicaragua, NONFRIED, Wien. ent. Z. ix, p. 76 (cf. BRENSKE, t. c. p. 137), n. sp.

✓ *Anodontonyx*, n. g., near *Scitula*, for *A. vigilans*, p. 302, *harti*, p. 303, n. spp., Australia; SHARP, Ins. Life, ii.

Anoxia detrita, Fairm., referred to *Cyphonotus*; REITTER, Wien. ent. Z. ix, p. 100. *A. scutellaris*, var. *tunisia*, is not *detrita*, Fairm.; BRENSKE, Wien. ent. Z. ix, p. 137. Table of characters of the species; REITTER, Wien. ent. Z. ix, pp. 105 & 173.

A. meridionalis, S. Europe, p. 105, *maculiventris*, Syria, p. 106, *pasiphae*, Crete, p. 107, *suturalis*, p. 174, *hirta*, p. 175, Greece, *kraatzi*, Asia Minor, p. 175, REITTER, t. c., n. spp.

Apogonia punctata, *indica*, India, *destructor*, Java, p. 336 (metamorphoses of latter, pls. xiii & xiv), Bos, Tijdschr. Ent. xxxiii, n. spp.

Ceraspis ruhli, *kleinei*, Ecuador, BRENSKE, Soc. Ent. v, p. 34, n. spp.

Clavipalpus blanchardi, note on antennæ of; HELLER, Ent. Nachr. xvi, p. 204.

Colpochila, revision of; BLACKBURN, P. Linn. Soc. N.S.W. (2) v, pp. 517, &c.

C. fortis, p. 522, *carinata*, *laminata*, p. 523, *dubia*, p. 524, *bella*, p. 525, *punctiventris*, p. 526, *solida*, p. 527, *bicolor*, p. 528, *deceptor*, p. 529, *pulchella*, p. 530, *funerea*, *sinuaticollis*, p. 531, *pygmæa*, p. 533, *fraterna*, p. 536, *gracilis*, p. 537, *setosa*, *gibbosicollis*, p. 538, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Cyphonotus = (*Microphylla*, Kr.); REITTER, Wien. ent. Z. ix, p. 265.

Euchirides: notes on the group; POLL, Tijdschr. Ent. xxxiii, pp. cxvii-cxx.

Eucheirus parryi, var. noticed; BATES, Ent. xxiii, p. 244.

✓ *Euranoxia*, n. g., near *Anoxia*, p. 196, for *E. valida*, n. sp., Transcaspiian region, p. 197; SEMENOW, Hor. Ent. Ross. xxiv.

✓*Grānanoxia*, n. g., for *Granida annamensis*, Fleut. ; BRENSKE, Ent. Nachr. xvi, p. 198.

Granida, Motsch., note on the composition of ; KRAATZ, Deutsche e. Z. 1890, p. 272 : characters of the genus ; BRENSKE, Ent. Nachr. xvi, p. 197.

✓*Heteronyx jubatus*, p. 669, *hirtuosus*, p. 671, *fallax*, p. 672, *fraternus*, p. 673, *vacuus*, p. 674, *simius*, p. 675, *rusticus*, p. 676, *nigrinus*, p. 677, *oscillator*, p. 678, *rapax*, p. 679, *lubricus*, p. 680, *montanus*, p. 681, *rothei*, p. 683, *puncticollis*, p. 684, *pustulosus*, p. 685, *rhinastus*, p. 688, *scalptus* p. 689, *laminatus*, p. 690, *doctus*, p. 692, *peregrinus*, p. 693, *vagans*, p. 694, *mimus*, *flavus*, p. 696, *longulus*, p. 698, *angustus*, p. 699, *posticalis*, p. 700, *collaris*, p. 701, *marginatus*, p. 703, *iridiventris*, p. 704, *bovilli*, p. 1220, *advena*, p. 1221, *lilliputanus*, p. 1222, *randalli*, p. 1226, *deceptor*, p. 1227, *viator*, p. 1228, *setifer*, p. 1233, *diversiceps*, p. 1234, *æqualiceps*, p. 1236, *quadraticollis*, p. 1237, *fissiceps*, p. 1238, *excisus*, p. 1239, *pinguis*, p. 1242, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv ; *H. yilgarnensis*, p. 557, *nitidus*, *sidneyanus*, p. 559, Australia, BLACKBURN, *op. cit.* v : n. spp.

Holochelus subseriatus and *Rhizotrogus costulatus*, Friv., distinctions and similarity noticed ; BRENSKE, Wien. ent. Z. ix, pp. 138 & 118.

Hoplia : tabulation of the Palæarctic species ; REITTER, Deutsche e. Z. 1890, pp. 375-383.

H. vicina, N. China, FRIVALDSZKY, Term. füzetek. xii, p. 199 ; *H. (Decamera) corniculata*, Broussa, p. 376, *H. maculata*, Mongolia, p. 377, *anatolica*, Bos-Dagh, p. 381, *dilutipes*, Banat, p. 383, REITTER, Deutsche e. Z. 1890 : n. spp.

Hymenoplia : table of characters of species ; REITTER, Wien. ent. Z. ix, pp. 260-263.

H. castiliana, Cuenca, *algorica*, p. 261, *heydeni*, p. 262, *vulpecula*, p. 263, Algeria, REITTER, Wien. ent. Z. ix, n. spp.

Lepidiota caudata, p. 85, *grata*, p. 86, Queensland, BLACKBURN, Tr. R. Soc. S. Austr., n. spp.

Macrodactylus subspinosus, life history ; RILEY, Ins. Life, ii, p. 295, woodcuts.

Melolontha cuprescens, Bl., ♂ described ; BATES, Ent. xxiii, p. 244. *M. vulgaris* and *hippocastani*, distribution and years of appearance in Denmark ; BERGSOE, Ent. Med. ii, pp. 121-127.

M. insignis, Kundshut, SEMENOW, p. 197, Hor. Ent. Ross. xxiv, n. sp.

✓*Microphylla*, n. g., for *Anoxia detrita*, Fairm., and *paupera*, Hampe ; KRAATZ, Deutsche e. Z. 1890, p. 351 (*cf. supra Cyphonotus*).

✓*Neoheteronyx*, n. g., near *Heteronyx*, for *N. lividus*, n. sp., Australia ; BLACKBURN, p. 1255, P. Linn. Soc. N.S.W. (2) iv.

✓*Neolepidiota*, n. g., near *Lepidiota*, p. 86, for *N. obscura*, n. sp., Australia, p. 87 ; BLACKBURN, Tr. R. Soc. S. Austr. xiii.

✓*Othonnius*, n. g. (*Macrophyllinae*), p. 5, for *O. batesii*, n. sp., N. S. Wales, p. 6 ; OLLIFF, P. Linn. Soc. N.S.W. (2) v.

Pachydema (Tanyproctus) telkensis, p. 105, *walteri*, p. 106, Turkestan, REITTER, Verh. Ver. Brünn. xxvii, n. spp.

Phyllotocus dispar, W. Australia, BLACKBURN, p. 83, Tr. R. Soc. S. Austr. xiii, n. sp.

Polyphylla, table of characters of the Palearctic species; REITTER, Wien. ent. Z. ix, p. 21. *P. olivieri*, *boryi*, *irrorata*, synonymy discussed; BRENSKE, Ent. Nachr. xvi, pp. 123-126, REITTER, t. c. pp. 185-189.

P. lesinæ, I. of Lesina, REITTER, Wien. ent. Z. ix, p. 21; *P. tridentata*, Turkestan, REITTER, Ent. Nachr. xvi, p. 189; *P. potanini*, p. 198, *vacca*, p. 199, China, SEMENOW, Hor. Ent. Ross. xxiv; *P. schoenfeldti*, Liu Kiu Is., BRENSKE, Ent. Nachr. xvi, p. 198 : n. spp.

Pseudohoplia, n. subg. of *Hoplia*; REITTER, Deutsche e. Z. 1890, p. 375.

Rhizocolax hauseri, Turkestan, REITTER, Deutsche e. Z. 1890, p. 359; *R. senescens*, N. China, FRIVALDSZKY, Term. füzetek, xii, p. 200 : n. spp.

Rhizotrogus myschenkowi, Ball., = (*semenowi*, Brenske), *glabricollis*, Reitt., = (*tekkensis*, Brenske); REITTER, Wien. ent. Z. ix, p. 102.

R. jubatus, Ordubad, REITTER, Deutsche e. Z. 1890, p. 170, n. sp.

Schizonycha glabra, Madagascar, BRENSKE, Soc. Ent. v, p. 34, n. sp.

Seriscesthis, Boisd., = (*Scitula*, Er.), revision of; BLACKBURN, P. Linn. Soc. N.S.W. (2) v, pp. 539-552.

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✓*Sphodroxia*, n. g., for *Anoxia lucasi*, Coq.; KRAATZ, Deutsche e. Z. 1890, p. 352.

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Anisoplia hypocrita, Burm., note on; REITTER, Wien. ent. Z. ix, p. 15.

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A. triangularis, Liu Kiu Is., SCHÖNFELDT, Ent. Nachr. xvi, p. 171; *A. (Euchlora) truncata*, China, BATES, Ent. xxiii, p. 244 : n. spp.

Calloodes, the generic characters noticed; BLACKBURN, p. 147, P. Linn. Soc. N.S.W. (2) v.

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Mimela pomacea, China, BATES, Ent. xxiii, p. 245; *M. rosetti*, p. 76, *pyropus*, p. 77, Cochinchina, NONFRIED, Wien. ent. Z. ix : n. spp.

Phyllopertha lederi, Reitt., = (*ammodendri*, Sem.); REITTER, Wien.

ent. Z. ix, p. 15. *P. glabra*, n. var. *multicolor*; REITTER, Wien. ent. Z. ix, p. 264.

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↓ *Pseudadoretus*, n. g., p. 202, for *P. dilutellus*, p. 203, *validus*, p. 204, n. spp., Transcaspian region, and *Adoretus phthisicus*, Dohrn; SEMENOW, Hor. Ent. Ross. xxiv. (Cf. also *Adoretus*.)

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Cavonus armatus, ♀ described; BLACKBURN, p. 1253, P. Linn. Soc. N.S.W. (2) iv.

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Eupatorus atkinsoni, Kashmir, NONFRIED, Deutsche e. Z. 1890, p. 89, n. sp.

↓ *Eutyctus*, n. g., near *Callicnemis*, p. 208, for *E. deserti*, n. sp., Transcaspian region, p. 210, SEMENOW, Hor. Ent. Ross. xxiv.

Golofa dohrni, Honduras, NONFRIED, S. E. Z. li, p. 16, n. sp.

↓ *Haplosoma*, n. g., near *Heteronychus*, for *H. ordinatum*, n. sp., Turkestan, SEMENOW, p. 205, Hor. Ent. Ross. xxiv.

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↓ *Phyllocephala*, n. g., near *Corynophyllus*, p. 1253, for *P. nigrohirta*, n. sp., Eucla, p. 1254, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv.

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Asthenorhina turneri, Westw., = (*Platynocnemis marginicollis*, Kr.); WESTWOOD, Tr. Ent. Soc. 1890, p. 396.

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✓ *Brachagenius*, n. g., near *Agenius*, p. 399, for *B. pictipennis*, fig. 12, pl. ii, *lineatipennis*, fig. 13, p. 400, n. spp., S. Africa; KRAATZ, Deutsche e. Z. 1890.

Cetonia intricata, Saund., = (*brevitarsis*, Lew.); KRAATZ, Deutsche e. Z. 1890, p. 91. *C. philippensis*, n. var. *luzonica*: KRAATZ, Deutsche e. Z. 1890, p. 218. *C. marmorata*, n. var. *cathaica*; BATES, Ent. xxiii, p. 245.

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Chalcothea pomacea, *planiuscula*, figured; WATERHOUSE, Aid, pl. clxxxv, figs. 4 & 5.

✓ *Chelorrhina polyphemus*, Fab., variation discussed; KRAATZ, Deutsche e. Z. 1890, p. 269, pl. iii, figs. 4a-6.

✓ *Cirrhopila*, n. g. (*Macronotides*), for *C. flavo-maculata*, n. sp., Java, pl. ii, fig. 14; KRAATZ, Deutsche e. Z. 1890, p. 279.

Celorrhina hornimanni, var. = (*glabrata*, Kolbe); KRAATZ, Deutsche e. Z. 1890, p. 218.

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Eudicella morgani, Westw., varietal note; KRAATZ, Deutsche e. Z. 1890, p. 215.

Glycyphana melanaria, Kr., and *bowringi*, Wall., noticed; RITSEMA, Notes Leyd. Mus. xii, p. 32.

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Glyptotheca whiteheadi figured; WATERHOUSE, Aid, pl. clxxxvi, fig. 3.

Gnathocera cruda, Jans., n. var. *minor*; DUVIVIER, p. 13, Ann. Ent. Belg. xxxiv.

Gnorimus variabilis, larva and habits described; BECKERS, Deutsche e. Z. 1890, p. 142: var. *heydeni* noticed; *id.*, note.

G. costipennis, Assam, JANSON, Notes Leyd. Mus. xii, p. 128, n. sp.

Goliathinus aureosparsus, Cameroons, POLL, Notes Leyd. Mus. xii, p. 131, n. sp.

Goliathus fornassinii?, ♂, pl. xi, fig. 4, *higginsii*, ♀, fig. 3, figured; WESTWOOD, Tr. E. Soc. 1890.

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- Lomaptera marginata*, Queensland, p. 31, *soror*, N. Guinea, p. 32, KRAATZ, Deutsche e. Z. 1890, n. spp.
- Macroma congoensis*, Centr. Africa, BATES, P. Z. S. p. 484, n. sp.
- Mecinorrhina torquata*, Dr., variation discussed ; KRAATZ, Deutsche e. Z. 1890, p. 267, pl. iii, figs. 1-3b.
- Megalorrhina harrisii*, Westw., variation discussed ; KRAATZ, Deutsche e. Z. 1890, p. 269, pl. iii, figs. 7-10.
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- Pachnoda rubromaculata*, n. var. *rubra*, KRAATZ, Deutsche e. Z. 1890, p. 398.
- Pachnoda abyssinica*, Bl., with var. *schimperi*, Abyssinia ; KRAATZ, Deutsche e. Z. 1890, p. 396, n. sp.
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- Rhomborhina microcephala*, Westw., var. = (*staudingeri*, Nonf.) ; KRAATZ, Deutsche e. Z. 1890, p. 271. *R. nigra* = (*nickerlii*, *cupripes*, Nonf.) ; KRAATZ, Deutsche e. Z. 1890, p. 92. *R. resplendens* and *gigantea*, differential characters ; RITSEMA, Notes Leyd. Mus. xii, p. 9.
- R. microcephala*, v. *staudingeri*, n. sp. (*sic*) Assam, NONFRIED, S. E. Z. li, p. 17 ; *R. ignita*, *reitteri*, China, NONFRIED, Deutsche e. Z. 1890, p. 90 : n. spp.
- Sphyrorrhina*, n. g., *Goliathides*, for *S. charon*, n. sp., Guinea ; NICKERL, S. E. Z. li, p. 14.
- Stethodesma servillei*, White, = (*cincticollis*, Raff.) ; KRAATZ, Deutsche e. Z. 1890, p. 93.
- Teniodera ditissima*, figured ; WATERHOUSE, Aid, pl. clxxxv, fig. 8.
- Taurhina niveus*, n. var. *cyaneus*, KRAATZ, Deutsche e. Z. 1890, p. 218.
- T. dannfelti*, Congo, AURIVILLIUS, Ent. Tidskr. xi, p. 204, n. sp.
- Trichius*, characters for distinction of the European species, separating *abdominalis*, Men., from *gallicus*, Heer ; REITTER, Wein. ent. Z. ix, p. 144.
- Tropinota turanica*, *spinifrons*, Turkestan, REITTER, p. 107, Verh. Ver. Brunn. xxvii, n. spp.
- Valgus modiglianii*, Sumatra, GESTRO, Ann. Mus. Genov. (2) vii, p. 98, n. sp.
- Xenoloba speciosa*, figured ; WATERHOUSE, Aid, pl. clxxxv, fig. 7. .

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[Cf. BEDEL (41), BLACKBURN (60, 61, 62, 66), DUVIVIER (200), FAIRMAIRE (238), GANGLBAUER (297), KERREMANS (419, 420, 421, 422), QUEDENFELDT (624), REITTER (652, 657, 668, 669), RICHTER (684) SCUDDER (754), SEMENOW (770), WATERHOUSE (889, 894).]

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Actenodes schmidtii, E. Africa, QUEDENFELDT, B. E. Z. xxxv, p. 135, n. sp.

Agrilus transversesulcatus, Tiflis, REITTER, Wien. ent. Z. ix, p. 195 ; *A. nubeculosus*, Obock, FAIRMAIRE, p. 548, Ann. Soc. Ent. Fr. (6) x ; *A. smaragdifrons*, p. 29, *bidentulus*, *plagiatus*, p. 31, *erosus*, p. 33, Kanssu, *gracilicornis*, Sze-tschuan, p. 35, GANGLBAUER, Hor. Ent. Ross. xxiv : n. spp.

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Aphanisticus krugeri, Rits., larva noticed ; RITSEMA, Tijdschr. Ent. xxxiii, p. xxii.

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Belionota nigrocingulata, Borneo, KERREMANS, p. cxxxv, C.R. Ent. Belg. 1890, n. sp.

Callopius quedenfeldti, Malay Archipelago, RICHTER, B. E. Z. xxxv, p. 133, n. sp.

Chalcophora superba and other species, habits in Queensland ; BARNARD, Ent. xxiii, pp. 179-181. *C. japonica* n. var. *oshimana* ; SCHÖNFELDT, Ent. Nachr. xvi, p. 172.

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Chrysobothrides, notes on the composition of the genera of ; KERREMANS, C.R. Ent. Belg. 1890, p. cxxxiii, &c.

Chrysochroa buqueti, variety described ; KERREMANS, p. cci, C.R. Ent. Belg. 1890.

C. waterhousei, E. India, KERREMANS, l. c. ; *C. holstii*, Bonin Is., WATERHOUSE, Ann. N. H. (6) v, p. 169 : n. spp.

Chrysodema viridi-impressa, Borneo, RICHTER, B. E. Z. xxxv, p. 134, n. sp.

Cisseis adspersa, E. India, KERREMANS, p. cciv, C.R. Ent. Belg. 1890, n. sp.

Corabus gentilis, E. India, KERREMANS, p. ccv, C.R. Ent. Belg. 1890 ; *C. aculeatus*, Kanssu, GANGLBAUER, p. 24, Hor. Ent. Ross. xxiv ; *C. (Melibæus) reitteri*, Transcasian region, SEMENOW, p. 212, Hor. Ent. Ross. xxiv : n. spp.

Cryptodactylus nigricans, E. India, KERREMANS, p. ccvi, C.R. Ent. Belg. 1890, n. sp.

Cylindromorphus spinipennis, Oran, BEDEL, p. cxxxvi, Bull. Soc. Ent. Fr. 1890, n. sp.

Discoderes pulchellus, Cast., referred to *Cryptodactylus*; KERREMANS, p. ccvi, C.R. Ent. Belg. 1890.

D. proximus, E. India, KERREMANS, p. ccvii, C.R. Ent. Belg. 1890, n. sp.

Melobasis, synonymical notes; BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 146.

M. thomsoni = (*purpureosignata*, Th.), Australia, BLACKBURN, *l. c.*, n. sp.

Neocuris viridiaurea, varietal note, BLACKBURN, p. 152, P. Linn. Soc. N.S.W. (2) v, n. sp.

Psiloptera kassaiensis, Congo, DUVIVIER, p. cxcv, C.R. Ent. Belg. 1890, fully described Ann. Ent. Belg. xxxiv, p. 16, n. sp.

↓ *Pseudactenodes*, n. g. (*Chrysobothrides*), for *P. iris*, n. sp., E. Africa; KERREMANS, p. cxxxvii, C.R. Ent. Belg. 1890.

Pseudactenodes (sub *Actenodes*) *smithi*, Qued., = (*iris*, Ker.); KERREMANS, p. clxviii, C.R. Ent. Belg. 1890.

Sambus kansuensis, Kanssu, GANGLBAUER, p. 27, Hor. Ent. Ross. xxiv, n. sp.

Sphenoptera: table of the characters of the trispinous Palearctic species; REITTER (668). *S. artemisiae*, n. var. *molitor*; REITTER, Deutsche o. Z. 1890, p. 170.

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Sternocera chrysis, n. var. *singularis*, KERREMANS, C.R. Ent. Belg. p. xix.

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Thrincopyge marginata, Mexico, WATERHOUSE, Ann. N. H. (6) v, p. 218, n. sp.

Toxoscelus purpureomicans, E. India, KERREMANS, p. ccv, C.R. Ent. Belg. 1890, n. sp.

Trachys kænigi, Circassia, *splendidula*, Ordubad, REITTER, Wien. ent. Z. ix, p. 146; *T. apicata*, Congo, DUVIVIER, p. cxcv, C.R. Ent. Belg.

1890, fully described Ann. Ent. Belg. xxxiv, p. 17; *T. (Habroloma) aurea*, Transcaspien region, SEMENOW, p. 212, Hor. Ent. Ross. xxiv; *T. liliputana*, *aneocupra*, *bicolor*, p. ccviii, *nigricans*, p. ccix, E. India, KERREMANS, C.R. Ent. Belg. 1890: n. spp.

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THROSCIDÆ.

[Cf. HORN (317).]

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[Cf. HORN (317).]

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Dromæolus variegatus, Bonv., figured, pl. x, fig. 10, Biol. Centr. Am. Col. iii (1).

D. mœrens, Panama, *senilis*, Guatemala, p. 219, *properus*, Panama, *ornatulus*, Nicaragua, pl. x, fig. 11, p. 220, *tripartitus*, Guatemala, fig. 12, *pusio*, p. 221, *suturalis*, *vanus*, p. 222, Mexico, *tetricus*, Guatemala, p. 223, HORN, Biol. Centr. Am. Col. iii (1), n. spp.

↓ *Dyscolotaxia*, n. g., near *Fornax*, p. 238, for *D. championi*, n. sp., Panama, pl. x, fig. 17, p. 239; HORN, Biol. Centr. Am. Col. iii (1).

Emathion intrusus, Nicaragua, HORN, p. 241, Biol. Centr. Am. Col. iii (1), n. sp.

Entomophthalmus asper, Panama, HORN, p. 246, Biol. Centr. Am. Col. iii (1), n. sp.

↓ *Eurachis*, n. g., p. 224, for *E. elegans*, n. sp., Nicaragua, pl. x, fig. 14, p. 225; HORN, Biol. Centr. Am. Col. iii (1).

Gastraulacus cavifrons, Nicaragua, HORN, p. 215, pl. x, fig. 9, Biol. Centr. Am. Col. iii (1), n. sp.

Farsus oblitus, Centr. America, HORN, p. 253, Biol. Centr. Am. Col. iii (1), n. sp.

Fornax atripennis, Guatemala, pl. x, fig. 15, p. 227, *castaneipennis*, p. 228, *sceleratus*, Panama, *truncatus*, Nicaragua, fig. 16, p. 229, *adjectus*, *carinifrons*, Centr. America, p. 230, *insitus*, Panama, p. 231, HORN, Biol. Centr. Am. Col. iii (1), n. spp.

↓ *Henecosoma*, n. g. (near *Hypocœlus*), for *H. discicollis*, n. sp., Centr. America, pl. x, fig. 20; HORN, p. 240, Biol. Centr. Am. Col. iii (1).

Idiotarsus estriatus, Nicaragua, HORN, p. 215, Biol. Centr. Am. Col. iii (1), n. sp.

Isorhipis vagans, Guatemala, *holosericea*, Panama, pl. x, fig. 8, HORN, p. 214, Biol. Centr. Am. Col. iii (1), n. spp.

Microrhagus sepositus, *repandus*, p. 248, *intrusus*, *frænatus*, pl. x, fig. 22, *ruficeps*, p. 249, *marcidus*, *protractus*, *maculicollis*, p. 250, *elatus*, *insidiosus*, pl. x, fig. 23, p. 251, *thoracicus*, p. 252, Centr. America, HORN, Biol. Centr. Am. Col. iii (1), n. spp.

↓ *Phænobolus*, n. g. (near *Anabolus*), for *P. bicolor*, n. sp., Centr. America, pl. x, fig. 13; HORN, p. 224, Biol. Centr. Am. Col. iii (1).

Phlegon viduus, Centr. America, HORN, p. 244, pl. x, fig. 21, Biol. Centr. Am. Col. iii (1), n. sp.

Plesiofornax pectoralis, Panama, p. 234, *paganus*, Guatemala, *longicornis*, p. 235, *inutilis*, *glandifer*, *opaculus*, p. 236, *imperitus*, *badius*, Panama, *elongatus*, p. 237, *puellus*, p. 238, Guatemala, HORN, Biol. Centr. Am. Col. iii (1), n. spp.

Pacilochrus fractus, Nicaragua, HORN, p. 216, Biol. Centr. Am. Col. iii (1), n. sp.

Stethon errans, Horn, referred to *Pacilochrus*; HORN, p. 216, Biol. Centr. Am. Col. iii (1).

Thylacosternus donatus, Mexico, HORN, p. 257, pl. x, fig. 25, Biol. Centr. Am. Col. iii (1), n. sp.

Trigonopleurus alienus, Panama, HORN, p. 243, Biol. Centr. Am. Col. iii (1), n. sp.

ELATERIDÆ.

[Cf. BLACKBURN (60, 62, 63, 65), BUYSSON (104), CANDÈZE (113, 114, 115, 116), DUMONT (194, 195), REITTER (648, 665, 666, 667), SCUDDER (754), WIELOWIEJSKI (917).]

Adiaphorus punctatus, E. India, DUMONT, p. clxxxv, C.R. Ent. Belg. 1890, n. sp.

Agonischius finitimus, cardoni, E. India, CANDÈZE, p. clvi, C.R. Ent. Belg. 1890, n. spp.

Agriotes desbrochersi, Algeria, BUYSSON, p. clvii, Bull. Soc. Ent. Fr. 1890; *A. koltzei*, East Siberia, REITTER, Deutsche e. Z. 1890, p. 147 : n. spp.

Agrypnus murinus, larvæ in stomach of a child; SANDBERG (719).

A. renardi, E. India, CANDÈZE, p. cxlviii, C.R. Ent. Belg. 1890, n. sp.

Alaus platteeuwi, Borneo, p. lxxvi, *cardoni*, E. India, p. cl, CANDÈZE, C.R. Ent. Belg. 1890; *A. darwini*, Australia, BLACKBURN, p. 1259, P. Linn. Soc. N.S.W. (2), iv : n. spp.

Aphanobius longithorax, Wied., = (*cylindricus*, Cand.); CANDÈZE, p. clv, C.R. Ent. Belg. 1890.

Athous spiniger, Cand., = (*Harminius castaneus*, Fairm.); BUYSSON, Bull. Soc. Ent. Fr. (6) x, p. xxi. *A. circumductus*, Men., = (*delphinus*, Reiche, and ♂ *lavergnei*, Reiche), *vittatus* var. *impallens* = (*murinus*, Reiche), *brevicornis*, Desb., = (*corsicus*, Reiche), *agnatus*, Reiche, = (*fullax*, ♂, Desbr.), *castanescens* var. = (*perugalloi*, Reiche); BUYSSON, pp. clxxi & clxxii, Bull. Soc. Ent. Fr. 1890. *A. transcaucasicus*, Stierl., referred to *Megapenthes*; REITTER, Ent. Nachr. xvi, p. 247.

A. dasycerus, Turkey, BUYSSON, p. clvii, Bull. Soc. Ent. Fr. 1890; *A. gigas*, Montenegro, REITTER, Ent. Nachr. xvi, p. 249; *A. flicollis*, Odessa, REITTER, Deutsche e. Z. 1890, p. 147; *A. menetriesi*, p. 243, *fausti*, *nigritulus*, p. 244, *vulpeculus*, *marginicollis*, p. 245, *daghestanicus*, *utschderensis*, p. 246, *mingrelicus*, p. 247, Caucasus, REITTER, Ent. Nachr. xvi : n. spp.

Cardiophorus hæmatomus, n. var. *tunisius*; HEYDEN, Deutsche e. Z. 1890, p. 73.

C. umbraculatus, rubicundus, p. cliii, *madidus, anceps*, p. cliv, C.R. Ent. Belg. 1890, n. spp.

Chalcolepidius pistori, Honduras, CANDÈZE, p. clxxxv, C.R. Ent. Belg. 1890, n. sp.

Corymbites monticola, Horn, = (*gracilis*, Cand.), p. 54, *inflatus*, Say, and *crassus*, are sexes of one species, p. 55; HORN, Ent. News, i. *C. nigricornis*, Panz., varietal note; HAMILTON, Canad. Ent. xxii, p. 237.

Diacanthus sphaerotherax, Germany, REITTER, Wien. ent. Z. ix, p. 265, n. sp.

Dicronychus candezei, Soudan, DUMONT, p. cxli, C.R. Ent. Belg. 1890, n. sp.

Elater pomonæ n. var. *gerardi*, CANDÈZE, p. cxx, C.R. Ent. Belg. 1890.

✓*Elathous*, n. g., near *Athous*, p. 247, for *E. buyssoni*, Ordubad, *candezei*, Crimea, p. 248, n. spp.; REITTER, Ent. Nachr. xvi.

Heteroderes spinosus, E. India, CANDÈZE, p. cli, C.R. Ent. Belg. 1890, n. sp.

✓*Homœolacon*, n. g., near *Lacon*, p. 90, for *H. gracilis*, n. sp., Australia, p. 91; BLACKBURN, Tr. R. Soc. S. Austr. xiii.

Lacon variatus, melancholicus, p. cxlviii, *lustratus*, p. cxlix, *succinctus*, p. cl, E. India, CANDÈZE, C.R. Ent. Belg. 1890, n. spp.

Macromalocera affinis, p. 562, *sinuaticollis*, p. 563, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Megapenthes limbalis is ♂ *granulosus*, ♀ of one species; HORN, p. 55, Ent. News, i.

M. mæstus, E. India, CANDÈZE, p. clii, C.R. Ent. Belg. 1890, n. sp.

Melanotus rufipes, larva; PLANET, Le Nat. xii, p. 74.

Melanoxanthus nigrosignatus, Java, CANDÈZE, p. 246, Notes Leyd. Mus. xii; *M. dorsatus*, *carbunculus*, E. India, CANDÈZE, p. clii, C.R. Ent. Belg. 1890: n. spp.

Monocrepidius angustipes, W. Australia, BLACKBURN, p. 561, P. Linn. Soc. N.S.W. (2) v, n. sp.

Pristilophus, note on, treating it as a valid genus; CANDÈZE, p. clv, C.R. Ent. Belg. 1890.

†*Pseudolacon*, n. g., near *Lacon*, p. 89, for *P. rufus*, n. sp., N.W. Australia, p. 90; BLACKBURN, Tr. R. Soc. S. Austr. xiii.

Sericosomus incongruus, Lec., = (*Sericus behrensi*, Cand.) ; HORN, p. 54, Ent. News, i.

Tetralobus fortnumi and *manglesi*, Hope, characters of; BLACKBURN, p. 139, Tr. R. Soc. S. Austr. xii.

T. thoracicus, W. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 309, n. sp.

RHIPIDOCERIDÆ, DASCILLIDÆ.

[*Cf.* BOURGEOIS (77).]

Collirhipis marmorea, ♀ described; BOURGEOIS, p. 161, Ann. Soc. Ent. Fr. (6) x.

Scirtes bicolor, *fossulifer*, p. 162, *albomaculatus*, *cassidioides*, p. 163, Indo-Chinese Penins., BOURGEOIS, Ann. Soc. Ent. Fr. (6) x, n. spp.

MALACODERMATA.

[*Cf.* ABEILLE (1, 2, 3), BOURGEOIS (76, 77), GORHAM (318), HEYDEN (358, 360), OLLIFF (579), REITTER (644, 648, 657), ROUSSEAU (713), WEISE (904).]

Monograph of the *Malachides* of Europe and the Mediterranean, with an account of structure, distribution, habits, metamorphosis, and new classification; ABEILLE (2).

Tables of the genera and species of *Malacodermidæ* of Belgium; ROUSSEAU, Ann. Ent. Belg. xxxiv, pp. 136–182.

Anthocomus apalochroides, Astrabad, ABEILLE, Ann. Mus. Genov. (2) ix, p. 89; *A. pupillatus*, Syria, *dux*, Afghanistan, ABEILLE, Rev. d'Ent. ix, p. 44: n. spp.

Apalochrus flavicornis, Utskamenogorsk, ABEILLE, Rev. d'Ent. ix, p. 50, n. sp.

†*Atelestodes*, n. subg. of *Atelestus*; ABEILLE, p. 207, Ann. Soc. Ent. Fr. (6) x.

Attalus uniformis, p. 567, *reitteri*, p. 582, Morocco, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) x ; *A. (Mixis) argus*, p. 51, *eros*, *adonis*, *histrion*, p. 52, *narcissus*, *cupido*, *apollo*, p. 53, *A. grandis*, p. 54, Abyssinia, ABEILLE, Rev. d'Ent. ix ; *A. erinaceus*, Astrabad, p. 45, *lutatus*, Egypt, p. 46, ABEILLE, t. c. : n. spp.

✓ *Atyphella*, n. g. (*Lampyrinae*), p. 645, for *A. lychnus*, p. 647, *scintillans*, p. 650, *flammans*, p. 651, n. spp., Australia ; OLLIFF, P. Linn. Soc. N.S.W. (2) iv : cf. also t. c. p. 1298, for description of female.

Axinotarsus violaceus, Morocco, ABEILLE, Rev. d'Ent. ix, p. 44, n. sp.

✓ *Brachemys*, n. n., provisionally suggested to replace *Atelestus*, Er. ; ABEILLE, p. 206, Ann. Soc. Ent. Fr. (6) x.

✓ *Callotraglops*, n. g., for a part of *Troglops*, auct. ; ABEILLE, p. 220, Ann. Soc. Ent. Fr. (6) x.

Calochromus chalybeus, N. Guinea, p. 288, fig. 1, *ornaticollis*, p. 291, *sumatrensis*, p. 292, Sumatra, BOURGEOIS, Ann. Mus. Genov. (2) vii, n. spp.

Cantharis martini, Cambodia, BOURGEOIS, Ann. Soc. Ent. Fr. (6) x, p. 173, n. sp.

Carphurus homalioides, Cambodia, BOURGEOIS, Ann. Soc. Ent. Fr. (6) x, p. 175, n. sp.

Cephaloncus, West., = (*Embrocerus*, Peyr.) ; ABEILLE, p. 210, Ann. Soc. Ent. Fr. (6) x.

Colotes uhagoni, Badajoz, ABEILLE, Rev. d'Ent. ix, p. 49 ; *C. anceyi*, *simius*, Abyssinia, ABEILLE, t. c. p. 54 : n. spp.

Cyrtosus (Malachius) schneideri, *reitteri*, Caucasus, ABEILLE, Rev. d'Ent. p. 35, n. spp.

Danacaea retowskii, Crimea, REITTER, Wien. ent. Z. ix, p. 195, n. sp.

Dasytes obscurus, metamorphoses ; XAMBEU, Rev. d'Ent. ix, p. 271.

Dasytiscus longipilis, *pilipes*, Transcaspian region, REITTER, p. 111, Verh. Ver. Brünn, xxvii ; *D. hauseri*, p. 360, *analys*, p. 361, Turkestan, id., Deutsche e. Z. 1890 : n. spp.

Diaphanes planus, E. India, GORHAM, Tr. E. Soc. 1890, p. 547, n. sp.

Ebaeus basipes, Turcomania, ABEILLE, p. 383, Ann. Soc. Ent. Fr. (6) x ; *E. tripictus*, Kischlak, p. 47, *luctuosus*, Caucasus, *senaci*, Turkey, p. 48, id., Rev. d'Ent. ix : n. spp.

Haplocnemus ruscicus, Ordubad, REITTER, Deutsche e. Z. 1890, p. 148, n. sp.

✓ *Hydaspes*, n. g., p. 171, near *Selasia*, for *H. fairmairei*, n. sp., Cochin China, p. 172 ; BOURGEOIS, Ann. Soc. Ent. Fr. (6) x.

Hypebaeus gestroi, Persia sep., ABEILLE, Ann. Mus. Genov. (2) ix, p. 90, n. sp.

Laius fasciatus, Cambodia, BOURGEOIS, Ann. Soc. Ent. Fr. (6) x, p. 174 ; *L. ? aurantiacus*, Abyssinia, ABEILLE, Rev. d'Ent. ix, p. 55 : n. spp.

Lampyrus olivieriana, Turkestan, HEYDEN, Deutsche e. Z. 1890, p. 359, n. sp.

Luciola timida, sexes described ; BOURGEOIS, p. 169, Ann. Soc. Ent. Fr. (6) x.

L. brahmina, p. 169, *de launeyi*, p. 170, Cochin China, BOURGEOIS, Ann. Soc. Ent. Fr. (6) x; *L. pudica*, Queensland, OLLIFF, P. Linn. Soc. N.S.W. (2) iv, p. 652 : n. spp.

Lycus (Lycostomus) longicollis, p. 164, *confrater*, *perraudieri*, p. 165, Cochin China, BOURGEOIS, Ann. Soc. Ent. Fr. (6) x, n. spp.

Lyponia waterhousei, E. India, GORHAM, Tr. E. Soc. 1890, p. 543, n. sp.

Malachius abdominalis, Fab., = (*marginicollis*, Luc.) ; BEDEL, Bull. Soc. Ent. Fr. 1890, p. lxxxii. *M. bipustulatus*, larva figured ; ANDRÉ, Le Nat. xii, p. 31. *M. marginellus*, pupa described, p. 199, figured, pl. iv, fig. 1 ; CHOBAUT, Ann. Soc. Ent. Fr. (6) x. *M. versicolor*, n. var. *viridibasis* ; REITTER, Deutsche e. Z. 1890, p. 172.

M. turanicus, p. 109, *rubromarginatus*, p. 110, Turkestan, REITTER, Verh. Ver. Brünn, xxvii ; *M. cervicornis*, *truncaticornis*, Syria, p. 36, *basalis*, Caucasus, p. 37, *dama*, Smyrna, p. 38, *turcomenicus*, Turcomania, p. 39, *rubromarginatus*, Turkestan, *oxyis*, Asia Minor, p. 40, *illusius*, Adalia, p. 41, *ibex*, Transcaucasus, *elaphus*, Greece, p. 42, *melanorhynchus*, Caucasus, p. 43, ABEILLE, Rev. d'Ent. ix : n. spp.

Malthodes liegeli, Klagensfurt, WEISE, Deutsche e. Z. 1890, p. 348, n. sp.

Melyris ruficrus, Fairm., = (*amaliæ*, Heyd.) ; HEYDEN, Wien. ent. Z. ix, p. 7.

✓ *Microfulistius*, n. g., near *Dasytiscus*, p. 111, for *M. fulvus*, n. sp., Turkestan, p. 112 ; REITTER, Verh. Ver. Brünn, xxvii.

Napachys multicolor, Turcomania, REITTER, p. 109, Verh. Ver. Brünn, xxvii, n. sp.

Pelochrus scutellaris, Algeria, ABEILLE, Rev. d'Ent. ix, p. 46, n. sp.

Plateros fuscicornis, Andaman Is., GORHAM, Tr. E. Soc. 1890, p. 544, n. sp.

Prionocerus cæruleipennis = (*forticornis*, *brevicornis*, Schf.), sexual characters ; BOURGEOIS, p. 176, Ann. Soc. Ent. Fr. (6) x.

Pyractomena borealis, light of ; COCKERELL, P. S. Lond. E. Soc. 1888-1889, p. 132.

Silis fissangula, Cochin China, BOURGEOIS, Ann. Soc. Ent. Fr. (6) x, p. 173, n. sp.

Troglops canaliculatus, Algeria, ABEILLE, Rev. d'Ent. ix, p. 49, n. sp.

Zygia reitteri, Tripolis, HEYDEN, Deutsche e. Z. 1890, p. 73, n. sp.

CLERIDÆ.

[Cf. BLACKBURN (66), FAIRMAIRE (239).]

Notes on the habits of many N. American species ; CHITTENDEN, Ent. Am. vi, pp. 154 & 155.

Natalis hirta, W. Australia, p. 122, *spinicornis*, S. Australia, *lugubris*, p. 123, *constricta*, Centr. Australia, *inconspicua*, p. 124, *fasciata*, p. 125, *longicollis*, p. 126, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, n. spp.

Stenocylidrus dispar, Madagascar, FAIRMAIRE, p. cci, Bull. Soc. Ent. Fr. 1890, n. sp.

Trichodes apiarius, habits ; BOISE, Bull. Soc. Ent. Fr. (6) x, p. xxxv.

BOSTRYCHIDÆ, PTINIDÆ, CIOIDÆ.

[Cf. BEDEL (41), BLACKBURN (60), CASEY (122), REITTER (644, 648, 657).]

Apate lindi, Port Lincoln, BLACKBURN, p. 1263, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Cioidæ, systematic position of discussed ; CASEY, p. 498, Ann. N. York Ac. v.

Lyctus, systematic position discussed ; CASEY, p. 495, Ann. N. York Ac. v : tabulation of the N. American species ; *id. t. c.* p. 324.

Rhizoperta dilatata, Turkestan, REITTER, p. 112, Verh. Ver. Brünn, xxvii, n. sp.

Lasioderma serricorne, habits noticed ; SCHWARZ, P. E. Soc. Wash. i, p. 225.

Ochina (Cittobium) numidica, Algeria, BEDEL, p. cxxxvi, Bull. Soc. Ent. Fr. 1890, n. sp.

Pseudoptinus nikitani, characters of ; REITTER, Wien. ent. Z. ix, p. 15.

P. austriacus, Vienna, REITTER, Deutsche e. Z. 1890, p. 391, n. sp.

Ptinodes cristatus, California, Ann. N. York Ac. v, p. 323, n. sp.

Xestobium austriacum, Lunz, p. 392, *circassicum*, Utsch-Deré, p. 393, *nitida*, Crete, *antennalis*, *caucasica*, Araxes Valley, p. 394, REITTER, Deutsche e. Z. 1890, n. spp.

Xyletinus flavipes n. var. *fulvicollis*, Ordubad ; REITTER, Wien. ent. Z. ix, p. 196.

Xylopertha mystica, p. 1264, *vidua*, p. 1265, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, n. spp.

TENEBRIONIDÆ.

[Cf. BLACKBURN (60, 61, 62, 63, 64, 65), CASEY (122), CHAMPION (123), DOHRN (179), FAIRMAIRE (238), FRIVALDSZKY (285), GESTRO (300), HEYDEN (358, 360, 361), HORN (380), MAYET (519), QUEDENFELDT (626, 628), REITTER (644, 648), REY (680), SEMENOW (770), WICKHAM (916).]

The habits and localities of many N. American species ; WICKHAM (916).

Adelium occidentale, S. Australia, BLACKBURN, p. 574, P. Linn. Soc. N.S.W. (2) v, n. sp.

Adelostoma grandicolle, Camaran Is., FAIRMAIRE, p. 554, Ann. Soc. Ent. Fr. (6) x, n. sp.

Adelphinus, Fairm., position and characters noticed ; REITTER, Deutsche e. Z. 1890, p. 150.

A. ordubadensis, with var. *fulvo-vittatus*, Araxes Valley, REITTER, *l. c.*, n. sp.

Akis schweinfurthi, Egypt, QUEDENFELDT, B. E. Z. xxxv, p. 139 ; *A.*

(*Solskia*) *grombcewskii*, Kundshut, SEMENOW, p. 221, Hor. Ent. Ross. xxiv : n. spp.

Amarygmus tardus, p. 1271, *uniformis*, p. 1272, Queensland, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Anatolica planata, p. 203, *polita*, *gravidula*, p. 204, *loczyi*, *suavis*, p. 205, N. China, FRIVALDSZKY, Term. füzetek, xii, n. spp.

Aphanotus parallelus, Arizona, CASEY, p. 483, Ann. N. York Ac. v, n. sp.

Aræoschizus, characters of the species; HORN, pp. 340-343, Tr. Am. Ent. Soc. xvii.

A. fimbriatus, Arizona, *simplex*, Texas, p. 369, CASEY, Ann. N. York Ac. v; *A. decipiens*, Arizona, HORN, p. 342, Tr. Am. Ent. Soc. xvii : n. spp.

Argoporis alutacea, Arizona, *nitida*, Texas, CASEY, Ann. N. York Ac. v, p. 406, n. spp.

✓ *Argyrophana*, n. g., near *Platyope*, *Pimeliidarum*, p. 222, for *A. deserti*, n. sp., Transcaspian region, p. 224; SEMENOW, Hor. Ent. Ross. xxiv.

Arthroleis lateripunctatus, Camaran Is., FAIRMAIRE, p. 553, Ann. Soc. Ent. Fr. (6) x, n. sp.

Asida nigroopaca, Tripolis, QUEDENFELDT, Ent. Nachr. xvi, p. 64; *A. angustula*, California, CASEY, Ann. N. York Ac. v, p. 370 : n. spp.

✓ *Asphena*, n. g., *Epitragides*, for *A. komarowi*, n. sp., Transcaspian region; SEMENOW, p. 218, Hor. Ent. Ross. xxiv.

Asphena, Sem., merged in *Sphenaria*; REITTER, Wien. ent. Z. ix, p. 15.

Blapstini, tabulation of the genera of; CASEY, Ann. N. York Ac. v, p. 409.

Blapstinus, monograph of the N. American species; CASEY, Ann. N. York Ac. v, pp. 416-462. *B. sordidus*, Lec., referred to *Trichoton* and redescribed; CASEY, Ann. N. York Ac. v, p. 410.

B. alutaceus = (*opacus*, Lec.), p. 423, *dispar*, p. 424, Florida, *fuscus*, Texas, p. 427, *validus*, California, p. 429, *sonora*, Mexico, p. 431, *castaneus*, Texas, p. 432, *histricus*, California, p. 433, *oregonensis*, p. 435, *niger*, p. 436, *cribricollis*, p. 437, Arizona, *fuliginosus*, p. 438, *rufipes*, p. 439, California, *crassicornis*, Nevada, p. 440, *elongatus*, California, p. 441, *gregalis*, Colorado, p. 442, *lepidus*, Texas, p. 444, *æqualis*, p. 445, *funebris*, p. 446, *parallelus*, p. 448, *inquisitus*, p. 449, California, *intermixtus*, Arizona, p. 451, *brunneus*, Texas, p. 453, *hesperius*, Oregon, p. 454, *hospes*, Wyoming, p. 455, *arenarius*, p. 457, *debilis*, p. 458, Texas, *humilis*, Florida, p. 459, *hydropicus*, Arizona, p. 461, CASEY, Ann. N. York Ac. v, n. spp.

Bolitophagus and allied N. American genera, characters of; CASEY, p. 486, Ann. N. York Ac. v.

B. serrifrons, Caucasus, REITTER, Deutsche e. Z. 1890, p. 172, n. sp.

Catomus antoniae, Ordubad, REITTER, Deutsche e. Z. 1890, p. 172, n. sp.

Chalcopterus superbus, p. 309, *interioris*, p. 311, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Chilometopon pallidum, Texas, CASEY, Ann. N. York Ac. v, p. 367, n. sp.

✓ *Colposcythis*, n. g., near *Colposcelis*, p. 113, for *C. walteri*, n. sp., Turkestan, p. 114; REITTER, Verh. Ver. Brünn, xxvii.

✓ *Colposphena*, n. subg. of *Sphenaria*; SEMENOW, p. 217, Hor. Ent. Ross. xxiv.

✓ *Conibiosoma*, n. g. for *Conibius elongatus*, Horn; CASEY, p. 476, Ann. N. York Ac. v.

Conibius guadalupensis, Guadalupe I., p. 470, *uniformis*, Arizona, p. 471, *alternatus*, p. 473, *crassipes*, p. 475, California, CASEY, Ann. N. York Ac. v, n. spp.

✓ *Coniontellus*, n. g. (*Coniontini*), p. 388, for *C. inflatus*, *subglaber*, n. spp., N. America, p. 389, and *Coniontis obesus*, Lec.; CASEY, Ann. N. York Ac. v.

Coniontis inequalis, p. 375, *punctipes*, *elongata*, p. 380, California, *alutacea*, Nevada, p. 383, *montana*, p. 384, *pallidicornis*, *genitiva*, p. 385, *parallela*, p. 386, *parviceps*, California, *setosus*, Idaho, p. 387, CASEY, Ann. N. York Ac. v, n. spp.

Cratidus fuscipilosus, S. California, CASEY, Ann. N. York Ac. v, p. 407, n. sp.

Cybotus, n. g., for *Blapstinus estriatus*, Lec.; CASEY, p. 481, Ann. N. York Ac. v.

Delognatha insignis, Madagascar, DOHRN, S. E. Z. li, p. 196, n. sp.

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Dilanus fausti, Askhabad, REITTER, Deutsche e. Z. 1890, p. 150, n. sp.

Eleates explanatus, Oregon, CASEY, p. 486, Ann. N. York Ac. v, n. sp.

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Eulabis crassicornis, California, CASEY, Ann. N. York Ac. v, p. 404, n. sp.

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E. congener, Texas, p. 333, *perforatum*, p. 334, *fusculum*, p. 335, Arizona, *cylindricum*, California, p. 337, *politum*, Texas, p. 338, *longipenne*, New Mexico, p. 339, *histricum*, p. 340, *muricatulum*, p. 341, Arizona, *discors*, p. 342, Texas, *debile*, Arizona, p. 343, *crassulum*, Texas, p. 344, CASEY, Ann. N. York Ac. v, n. spp.

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✓*Microblemma*, n. g. *Tentyriides*, near *Platamodes*, for *M. simplex*, n. sp., Transcaspian region; SEMENOW, Hor. Ent. Ross. xxiv, p. 213.

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Opatrum thalense, Tunis, MAYET, Bull. Soc. Ent. Fr. 1890, p. civ, n. sp.

Phaleria: characters and synonymy of the European species; REY, p. 327, Rev. d'Ent. ix.

P. insulana, Corsica, REY, p. 329, t. c.; *P. gracilipes*, Texas, CASEY, p. 484, Ann. N. York Ac. v : n. spp.

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↓ *Pseudocædius*, n. g. near *Cædius*, for *P. squamosus*, n. sp., N. W. Australia ; BLACKBURN, p. 91, Tr. R. Soc. S. Austr. xiii.

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Saragus rugosus, Boisd., noticed ; BLACKBURN, p. 1269, P. Linn. Soc. N.S.W. (2) iv.

Scleropatrum turanicum, Turcomania, *tuberculatum*, Thibet, *tuberculiferum*, *striatogranulatum*, N. China, REITTER, Deutsche e. Z. 1890, p. 149, n. spp.

Sphenaria komarowi, *rubripes*, Turkestan, REITTER, p. 115, Verh. Ver. Brünn, xxvii ; *S. tomentosa*, *obtusa*, p. 214, *vestita*, p. 215, *S. (Colposphena) breviceps*, p. 216, Transcaspien region, SEMENOW, Hor. Ent. Ross. xxiv : n. spp.

↓ *Sterces*, n. g., *Cnodalonides*, p. 640, for *S. resplendens*, Centr. Africa, pl. lvi, figs. 3a-c, p. 641, and *violaceipennis*, p. 640, Lagos, n. spp., CHAMPION, P. Z. S. 1890.

↓ *Sternoplax*, n. subg. of *Trigonoscelis*, for *T. (S.) szechenyi*, N. China, n. sp. ; FRIVALDSZKY, Term. füzetek, xii, p. 207.

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↓ *Telabis*, n. subg. of *Eurymetopon* ; CASEY, Ann. N. York Ac. v, p. 330.

Tenebrioninæ (subfam.), the classification of the groups ; CASEY, Ann. N. York Ac. v, pp. 390-394.

↓ *Trichosuragus*, n. g., ? near *Saragus*, p. 1270, for *T. pilosellus*, Yorke Peninsula, n. sp., p. 1271 ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iv.

Trigonoscelis kraatzi, N. China, FRIVALDSZKY, Term. füzetek, xii, p. 206, n. sp.

Triorophus lecontei, Texas, CASEY, Ann. N. York Ac. v, pp. 327 & 502, n. sp.

Ulus fimbriatus, p. 413, *maritimus*, *elongatulus*, p. 414, Texas, CASEY, Ann. N. York Ac. v, p. 414, n. spp.

Xanthothopeia aruwimensis, Centr. Africa, CHAMPION, p. 643, pl. lvi, fig. 7, P. Z. S. 1890, n. sp.

Zopherus mexicanus eating through metal ; ROTH, Soc. Ent. v, p. 93.

Z. induratus, California, CASEY, Ann. N. York Ac. v, p. 367, n. sp.

CISTELIDÆ.

[*Cf.* REITTER (646, 662).]

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✓ *Heliostrœma*, n. subg. of *Omophlus* ; REITTER, Deutsche e. Z. 1890, p. 36.

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✓ *Omophlina*, n. subg. of *Omophlus* ; REITTER, Deutsche e. Z. 1890, p. 35.

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✓ *Proctenius*, n. subg. of *Cteniopus*, for *C. granatensis*, Ros. ; REITTER, Wien. ent. Z. ix, p. 256.

↓ *Steneryx*, n. g., for *Cistela dejeani*, Fald. ; REITTER, Wien. ent. Z. ix, p. 256.

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[*Cf.* FAIRMAIRE (239), REITTER (648).]

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Lagria melichari, Tyrol, REITTER, Deutsche e. Z. 1890, p. 173, n. sp.

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Lophophyllus rugicollis, Madagascar, FAIRMAIRE, p. cciii, Bull. Soc. Ent. Fr. 1890, n. sp.

PEDILIDÆ, ANTHICIDÆ, XYLOPHILIDÆ.

[*Cf.* BLACKBURN (62), CHAMPION (124, 125, 126, 317), REITTER (644, 648).]

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[Cf. CHAMPION (317), RITSEMA (698), SCUDDER (754).]

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Pentaria canescens, p. 252, *flavipes*, *brunneipennis*, *brevicornis*, p. 253, *bicincta*, *trisignata*, pl. xi, fig. 2, p. 254, *quadriguttata*, figs. 3 & 4, *unifasciata*, fig. 5, p. 255, *decolor*, *angustata*, p. 256, Centr. America, CHAMPION, Biol. Centr. Am. Col. iv (2), n. spp.

CANTHARIDÆ.

[Cf. AURIVILLIUS (22), BEAUREGARD (37), BLACKBURN (64), CHAMPION (123), CUÉNOT (158), DOKHTOUROFF (181), DUGÈS (192, 193), DUVIVIER (200), ESCHERICH (231, 232, 233), KÜNCKEL (462), REITTER (644, 656, 657).]

Anatomy, biology, classification, with characters of the genera and catalogue of the species ; BEAUREGARD (37).

Cantharis (Lytta) roborowskyi figured ; DOKHTOUROFF, pl. i, fig. 10, Hor. Ent. Ross. xxiv.

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Eletica bicolor, Centr. Africa, CHAMPION, p. 645, pl. lvi, fig. 8, P. Z. S. 1890, n. sp.

Epicauta lecontei, n. n. for *E. dichroa*, Lec.; HEYDÉN, Wien. ent. Z. ix, p. 99.

E. cupræola, p. 62, *intermedia* (= *nigritarsis*, Chev.), p. 68, *subatra*, p. 72, *jimenesi*, p. 73, *leoni*, p. 74, *media*, p. 82, *subrubra*, *mixta*, p. 83, *canoï*, p. 86, *potosina*, p. 89, *apicalis*, p. 90, Mexico, DUGÈS, An. Mus. Michoacan, ii, n. spp.

Gnathium atrum, p. 113, *flavum*, p. 107, Mexico, DUGÈS, An. Mus. Michoacan, ii, n. spp.

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Meloë: systematic revision of the pubescent species of the old world; ESCHERICH, Wien. ent. Z. ix, p. 87, &c.: embryology of; NUSBAUM (573): blood, function and origin of the liquid ejected; CUÉNOT (158). *M. autumnalis* and *cyaneus*, metamorphoses; BEAUREGARD, Ins. Ves. pp. 449-454. *M. brevicollis* varr. = (*splendens*, Esch., *puncticollis*, Motsch., and ? *corvinus*, Mars.); *M. luctuosus*, Br., noticed; ESCHERICH, Deutsche e. Z. 1890, p. 284. *M. brevicollis*, Pz., = (*splendens*, Esch.), *reitteri*, characters of; *id.*, Wien. ent. Z. ix, p. 23.

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Nemognata rufa, p. 111, *tarasca*, p. 112, Mexico, DUGÈS, An. Mus. Michoacan, ii, n. spp.

Rhampholyssa komarowi, Transcaspian region, REITTER, p. 119, Verh. Ver. Brünn, xxvii, n. sp.

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Zonabris przewalskyi figured; DOKHTOUROFF, pl. i, figs. 11 & 12, Hor. Ent. Ross. xxiv.

Z. beckeri, Sarepta; ESCHERICH, Wien. ent. Z. ix, p. 24; *Z. margaritæ*, p. 120, *cyaneovaria*, *komarowi*, p. 121, Turkestan, REITTER, Verh.

Ver. Brunn, xxvii ; *Z. posticalis*, p. 136, *steppensis*, p. 137, *konigi*, p. 143, *heydeniana*, p. 145, *14-maculata*, p. 150, *reitteri*, p. 157, *tenuepunctata*, p. 165, *kouschakiewitschi*, p. 167, *turkestanica*, p. 168, W. Asia, DOKHTOUROFF, Hor. Ent. Ross. xxiv ; *Z. (Mylabris) stanleyana*, *Z. (Ceroctis) congoana*, Congo, DUVIVIER, p. cxv, C.R. Ent. Belg. 1890, and Ann. Ent. Belg. xxxiv, pp. 21 & 22 : n. spp.

Zonitis 4-punctata, n. var. *korbi* ; ESCHERICH, p. 24, Wien. ent. Z. ix.

Z. andersoni, p. 142, *brevicornis*, p. 143, *rustica*, p. 145, *murrayi*, p. 146, *gloriosa*, p. 147, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xii ; *Z. flohri*, p. 110, *fulva*, *nigro-maculata*, p. 111, Mexico, DUGÈS, An. Mus. Michoacan, ii : n. spp.

CEDEMERIDÆ.

[Cf. CHAMPION (317), GANGLBAUER (297), HEYDEN (360), REITTER (648).]

Anoncodes femorata, Kanssu, GANGLBAUER, p. 38, Hor. Ent. Ross. xxiv, n. sp.

Asclera maculicollis, Kanssu, p. 42, *obsoleta*, Shansi, p. 43, GANGLBAUER, Hor. Ent. Ross. xxiv, n. spp.

Copidita panamensis, pl. vii, fig. 2, *scabrosa*, p. 145, *trifoveata*, fig. 3, *maculicollis*, fig. 4, p. 146, *palpalis*, p. 147, *apicalis*, fig. 5, *parvula*, fig. 6, p. 148, *nigripennis*, fig. 7, p. 149, Centr. America, CHAMPION, Biol. Centr. Am. Col. iv (2), n. spp.

↓ *Diplectroides*, n. g., p. 126, for *D. longicornis*, p. 126, pl. vi, fig. 5, *flavicollis*, p. 127, fig. 6, n. spp., Centr. America, CHAMPION, Biol. Centr. Am. Col. iv (2).

Diplectrus nigripes, p. 122, pl. vi, fig. 1, *armatus*, Nicaragua, *annulicornis*, p. 123, pl. vi, fig. 2, Centr. America, *giganteus*, Costa Rica, p. 124, fig. 3, *concolor*, Panama, *nitidicollis*, fig. 4, Costa Rica, p. 125, CHAMPION, Biol. Centr. Am. Col. v (2), n. spp.

Ditylus basalis, Guatemala, CHAMPION, Biol. Centr. Am. Col. iv (2) p. 121, pl. v, fig. 25, n. sp.

Edemera jucunda, Turkestan, HEYDEN, Deutsche e. Z. 1890, p. 363, n. sp.

Oxaxis : notes on the genus and its allies, referring to it species placed hitherto in other genera, and merging in it *Hypasclera*, Kirsch ; *H. schistacea*, K., figured, pl. vii, fig. 21, described, p. 162 ; CHAMPION, Biol. Centr. Am. Col. iv (2) pp. 149 & 150.

O. femoralis, pl. vii, fig. 8, *podagrica*, p. 151, *höllosericea*, fig. 9, p. 152, *mandibularis*, fig. 10, p. 153, *litoralis*, fig. 11, *limbata*, p. 154, *teapensis*, fig. 12, p. 155, *pictipennis*, fig. 13, *bilineata*, fig. 14, *pilosa*, fig. 15, p. 156, *tropicalis*, *nitidicollis*, fig. 16, p. 157, *angustata*, *lineatula*, fig. 17, p. 158, *plumbea*, p. 160, *rugicollis*, *coahuilæ*, *trimaculata*, fig. 20, p. 161, *minuta*, *dugesii*, fig. 22, p. 163, *variegata*, fig. 23, p. 164, Centr. America, CHAMPION, Biol. Centr. Am. Col. iv (2), n. spp.

↑ *Piras*, n. g. (near *Probosca*), p. 164, for *P. nasalis*, pl. vii, fig. 24,

bicolor, fig. 25, p. 165, n. spp., Centr. America, CHAMPION, Biol. Centr. Am. Col. iv (2).

Probosca acuminata, Amasia, REITTER, Deutsche e. Z. 1890, p. 152, n. sp.

√ *Sisenes*, n. g., p. 130, for the following n. spp. from Centr. America, viz.: *cyanipennis*, p. 131, pl. vi, fig. 9, *boops*, fig. 10, *varians*, fig. 11, p. 132, *suffusus*, fig. 12, p. 133, *parasiloides*, fig. 13, *vittatipennis*, fig. 14, p. 134, *rubricollis*, fig. 15, p. 135, *sinanjæ*, fig. 16, *telephoroides*, p. 136, *viridipennis*, *testaceipes*, fig. 17, p. 137, *puncticollis*, *foveatus*, fig. 18, *thoracicus*, p. 138, *lineatocollis*, fig. 19, p. 139, *eximius*, figs. 20 & 21, *dilaticornis*, fig. 22, p. 140, *suturalis*, fig. 23, *lyciformis*, fig. 24, p. 141, *mimetes*, fig. 25, *personatus*, fig. 26, p. 142, and from the Amazons Valley *S. scutellaris*, p. 143; CHAMPION, Biol. Centr. Am. Col. iv (2).

Stenaxis nigripes, Kanssu, GANGLBAUER, Hor. Ent. Ross. xxiv, p. 44, n. sp.

√ *Vasuces*, n. g. (near *Xanthochroa*), p. 127, for *V. vneipennis*, Mexico, p. 128, pl. vi, fig. 7, *sordidus*, *costatus*, fig. 8, Guatemala, p. 129, n. spp.; CHAMPION, Biol. Centr. Am. Col. iv (2).

√ *Vodomarus*, n. g. (near *Cedemera*), for *V. quadrifeveolatus*, n. sp., Centr. America, pl. vii, fig. 1; CHAMPION, p. 143, Biol. Centr. Am. Col. iv (2).

Xanthochroa potanini, Sze-tschuan, p. 36, *semenovi*, Kanssu, p. 37, GANGLBAUER, Hor. Ent. Ross. xxiv, n. spp.

CURCULIONIDÆ.

[Cf. BLACKBURN (62, 63, 65), DESBROCHERS (164, 165), DUVIVIER (200), EVERTS (236), FAIRMAIRE (476), FAUST (241, 242, 243, 244, 245, 246, 247, 248, 249), FLACH (263), GESTRO (300), GUILLEBEAU (335), HAMILTON (348), KUTHY (464), REITTER (644, 648, 649, 657), ROELOFS (710, 711), SCUDDER (754), SHARP (317), SIMPSON (405), STIERLIN (832, 833).]

The number of described species and genera; FAUST, S. E. Z. li, p. 116. Structure of prosternum discussed, with figures; EVERTS (236).

On the food-habits of North American *Rhynchophora*; BEUTENMÜLLER, Canad. Ent. xxii, pp. 200-203 & 258-261. Notes on the habits of many North American species; CHITTENDEN, Ent. Am. vi, pp. 167-172.

Aculles korbi, Andalusia, STIERLIN, MT. Schw. ent. Ges. viii, p. 242; *A. kruperi*, Greece, FAUST, Deutsche e. Z. 1890, p. 324: n. spp.

Acantholophus franklinensis, Australia, BLACKBURN, p. 92, Tr. R. Soc. S. Austr. xiii; *A. niveovittatus*, W. Australia, BLACKBURN, p. 576, P. Linn. Soc. N.S.W. (2) v: n. spp.

Agestra punctulata, Adelaide, BLACKBURN, p. 584, P. Linn. Soc. N.S.W. (2) v, n. sp.

Alcides biai, Congo, DUVIVIER, p. cxcv, C.R. Ent. Belg. 1890, and Ann. Ent. Belg. xxxiv, p. 24, n. sp.

Allocorynina, n. subfam., near *Rhynchitina*, p. 45, for the following n. g.:—

Allocorynus, n. g., for *A. mollis*, n. sp., Mexico, pl. ii, fig. 18 ; SHARP, p. 46, Biol. Centr. Am. Col. iv (3).

Alophus pacatus, Amdo, FAUST, p. 444, Hor. Ent. Ross. xxiv ; *A. müklini*, Mongolia, FAUST, Öfv. Finska Förh. xxxii, p. 70 : n. spp.

Amblyrhinus viridanus, Cochin China, FAUST, S. E. Z. li, p. 74, n. sp.

Anomphus setulifer, Morocco, REITTER, p. 157, Deutsche e. Z. 1890, n. sp.

Anarciarthrum, n. g., *Erirhinides*, p. 354, for *A. viride*, n. sp., Australia, p. 355 ; BLACKBURN, P. Linn. Soc. N.S.W. (2) v.

Anorthorrhinus, n. g., *Erirhinides*, p. 327, for *A. pictipes*, n. sp., S. Australia, p. 328 ; BLACKBURN, P. Linn. Soc. N.S.W. (2) v.

Anthonomus, characters of the British species ; FOWLER, Ent. M. M. (2) i, pp. 309-313. *A. terreus*, varr. described ; FAUST, pp. 91 & 92, Öfv. Finska Förh. xxxii.

Antyllis alternata, p. 345, *bella*, p. 587, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v : n. spp.

Apion, notes on habits and food-plants in Italy ; VITALE, Bull. Ent. Ital. xxi, pp. 141-156. *A. rufirostre* n. var. *destefanii* ; *id. t. c.* p. 148. *A. tubiferum*, metamorphoses, XAMBEU, p. 273, Rev. d'Ent. ix.

A. meditabundum, p. 104, *amphibolum*, p. 105, *gnarum*, p. 106, Siberia and Mongolia, FAUST, Öfv. Finska Förh. xxxii ; *A. strobilanthi*, Sikkin, DESBROCHERS, p. 215, J. A. S. B. lix, pt. 2 : the following n. spp. are described from Centr. America, viz. : *A. spretissimum*, *præditum*, p. 48, *dissimilipes*, *nitidirostre*, p. 49, *erythropterum*, pl. iii, fig. 2, *ægrotum*, fig. 3, *guatemalenum*, p. 50, *acupunctatum*, *stabile*, p. 51, *glyphicum*, *tabogense*, *championi*, fig. 4, p. 52, *davidis*, *derasum*, p. 53, *panamense*, *pauper*, p. 54, *tantillum*, *lassum*, p. 55, *mediocre*, *hystriculum*, p. 66, *gracilirostre*, pl. ii, fig. 22, *punctulirostre*, *colon*, pl. iii, fig. 5, p. 57, *laminatum*, fig. 6, *vetustum*, p. 58, *stricticolle*, pl. ii, fig. 21, *heterogeneum*, pl. iii, fig. 7, p. 59, *seriatum*, fig. 8, *quercicola*, p. 60, *spectator*, *fuscimanum*, p. 61, *altum*, *longimanum*, fig. 9, p. 62, *oscillator*, *acarinum*, p. 64, *conicicolle*, *picturatum*, fig. 11, *cretaceicolle*, pl. ii, fig. 25, p. 65, *matricum*, *basirostre*, pl. iii, fig. 12, p. 66, *calcaratipes*, pl. ii, fig. 20 (as *calcaratum*), *scydmaenoides*, pl. iii, fig. 13, p. 67, *subrufum*, *hastifer*, p. 68, *poeticum*, fig. 14, *rufinulum*, pl. ii, fig. 24, p. 69, *vinosum*, *chiriquense*, *relictum*, p. 70, *maceratum*, *pulchripes*, p. 71, *epicum*, *errabundum*, p. 72, *solitarium*, *filipes*, *pleuriticum*, pl. iii, fig. 15, p. 73, *fraudentum*, *pallitarse*, fig. 16, p. 74, *germanum*, *disparatum*, p. 75, *subauratum*, fig. 17, *teapense*, p. 76, *sanctifelicis*, fig. 19, *pedestre*, p. 77, *rugirostre*, *auctum*, *nodicorne*, fig. 18, p. 78, *pacificum*, *ferrugineum*, p. 79, *laterale*, *longicolle*, p. 80, SHARP, Biol. Centr. Am. Col. iv (3), n. spp.

Apoderus coryli, n. var. *fidus*, p. 421, *rufiventris*, Roel., *erythrogaster*, Voll., *nitens*, Roel., *cyanopterus*, Motsch., synonymy discussed, pp. 422-424 ; FAUST, Hor. Ent. Ross. xxiv. *A. humeralis*, n. var. *ater* ; *id.*, S. E. Z. li, p. 166.

A. ludyi, Goritz, REITTER, Deutsche e. Z. 1890, p. 174 ; *A. apicalis*, China and Japan, FAUST, *t. c.* p. 257 ; *A. dimidiatus*, p. 421, Sze-tschuan, *potunini*, Ganssu, p. 423, FAUST, Hor. Ent. Ross. xxiv ; *A. flaviceps*,

Sikkim, DESBROCHERS, p. 213, J. A. S. B. lix, pt. 2 ; *A. (Cygnotrachelus) wallacei*, Celebes, FAUST, S. E. Z. li. p. 166 : n. spp.

† *Apterocolus*, n. g., near *Pterocolus*, p. 44, for *A. gravidus*, n. sp., Mexico, pl. ii, fig. 17, p. 45 ; SHARP, Biol. Centr. Am. Col. iv (3).

Argoptochus virens, Siberia, FAUST, Öfv. Finska Förh. xxxii, p. 68, n. sp.

Attelabus mutus, Ganssu, FAUST, p. 425, Hor. Ent. Ross. xxiv, n. sp.

Auletobius nudus, Panama, *rostralis*, pl. ii, fig. 14, p. 42, *affinis*, Guatemala, *optatus*, Panama, fig. 15, p. 43, SHARP, Biol. Centr. Am. Col. iv (3), n. spp.

Bagous lepieuri, France, GUILLEBEAU, Bull. Soc. Ent. Fr. 1890, p. lxxiv ; *B. subrubus*, Thessaly, REITTER, Deutsche e. Z. 1890, p. 161 : n. spp.

Balaninus : food habits of the N. American species ; Canad. Ent. xxii, pp. 1-8.

B. hispanus, Spain, STIERLIN, MT. Schw. ent. Ges. viii, p. 246 ; *B. transversalis*, p. 261, *haroldi*, p. 262, China, FAUST, Deutsche e. Z. 1890 : n. spp.

Baris kiesenwetteri, Greece, FAUST, Deutsche e. Z. 1890, p. 326 ; *B. sibirica*, Siberia, FAUST, Öfv. Finska Förh. xxxii, p. 102 ; *B. longicollis*, Ganssu, FAUST, p. 473, Hor. Ent. Ross. xxiv : n. spp.

Bothynoderes carinicollis, Gyll., = (*cognatus*, *angulicollis*, Chev.) ; FAUST, S. E. Z. li, p. 111.

B. securus, Amdo, FAUST, p. 462, Hor. Ent. Ross. xxiv, n. sp.

Brachyaspistes subfasciatus, Sikkim, DESBROCHERS, p. 212, J. A. S. B. lix, pt. 2, n. sp.

Byctiscus congener, *motschulskyi*, variation noticed ; FAUST, p. 429, Hor. Ent. Ross. xxiv.

Celebia nobilis, p. 178, *boisduvali*, p. 179, *frontalis*, p. 180, Celebes, FAUST, S. E. Z. li, n. spp.

Cercidocerus chevrolati, Java, p. 78, *distinctus*, Darjeeling, p. 79, FAUST, S. E. Z. li, n. spp.

Ceuthorhynchidius lunatus, Reitt., referred to *Oxyonyx* ; FAUST, S. E. Z. li, p. 115.

C. bellus, p. 161, *lunatus*, p. 162, Ordubad, REITTER, Deutsche e. Z. 1890, p. 162, n. spp.

Ceuthorhynchus signatus and allies, characters of ; FAUST, pp. 100-102, Öfv. Finska Förh. xxxii. *C. hæmorrhoidalis*, Motsch., noticed ; FAUST, S. E. Z. li, p. 116.

C. paszlavskyi, Hungary, KUTHY, Term. füzetek, xiii, p. 7 ; *C. flavitarsis*, Ordubad, REITTER, Deutsche e. Z. 1890, p. 163 ; *C. testatus*, Amdo, FAUST, p. 472, Hor. Ent. Ross. xxiv : n. spp.

Charodrys elegans, Asia Minor, FAUST, Deutsche e. Z. 1890, p. 336, n. sp.

Chloropholus orichalceus, Madagascar, FAUST, S. E. Z. li, p. 184, n. sp.

Chrysolophus spectabilis, variation of ; SMITH, Ent. xxiii, p. 137.

Cionus indicus, Dam-Dim, DESBROCHERS, p. 216, J. A. S. B. lix, pt. 2, n. sp.

Cleonides : note on winged and apterous species ; GRANDJEAN, Rev. Sci. Bourb. ii, p. 13.

Cleonus lagopus, Fhrs., position noticed, = (*obliquatus*, *irroratus*, Mén.), *anxius* = (*basigranatus*, Fairm.) ; FAUST, S. E. Z. li, pp. 111 & 112. *C. bicarinatus*, Gebl., noticed and referred to *Pleurocleonus* ; FAUST, S. E. Z. li, p. 114.

C. (Cyphocleonus) korbi, Andalusia, STIERLIN, MT. Schw. ent. Ges. viii, p. 242, n. sp.

Coccotorus scutellaris and *prunicida* figured ; *Ins. Life*, ii, p. 259.

↓ *Celiopus*, n. subg. of *Psalidium* ; FAUST, p. 293, Hor. Ent. Ross. xxiv.

Celostethus fausti, Ordubad, REITTER, Deutsche e. Z. 1890, p. 159, n. sp.

↓ *Colpothorax*, n. g., p. cxxix, note, for *Zygops undulata*, n. sp., Amazons, p. cxxix ; DESBROCHERS, Bull. Soc. Ent. Fr. 1890.

Conocephalus guerini, nomenclature noticed ; DOHRN, S. E. Z. li, p. 83.

Conocatus grævus redescribed ; STIERLIN, MT. Schw. ent. Ges. viii, p. 162.

C. calabricus, Calabria, FAUST, Deutsche e. Z. 1890, p. 330, n. sp.

Conorhynchus dissimulatus, = (*cretaceus*, Redt.) ; FAUST, p. 112, S. E. Z. li. *C. nigrivittis*, Pall., = (*plumbeicollis*, Chev.), *conirostris*, Gebl., = (*bartelsi*, Fhrs.) ; *id. t. c.* p. 113.

• *C. candidulus*, W. Asia, FAUST, S. E. Z. li, p. 113, n. sp. ?

Corigetus papuanus, Sumatra, FAUST, S. E. Z. li, p. 73, n. sp.

Cratosomus dohrni, Cauca Valley, FAUST, S. E. Z. li, p. 192, n. sp.

Cydmaea obscura, p. 339, *diversa*, *invalida*, p. 340, Australia, *lineata*, Kangaroo I., p. 584, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Cylas formicarius, Fab., = *turcipes*, Boh.), *brunneus*, ♀, = (*angustatus*, Lab. & Imh.) ; DESBROCHERS, p. 215, J. A. S. B. lix, pt. 2.

C. submetallicus, E. India, DESBROCHERS, p. 214, J. A. S. B. lix, pt. 2, n. sp.

Cyphicerus, Schön., should include *Ptochidius*, Motsch., and *Canoixus*, Roel. ; FAUST, S. E. Z. li, p. 66.

C. nepalensis, Nepal, p. 65, *appendicinus*, Philippines, *rusticanus*, Celebes, p. 68, *decoratus*, Cochin China, p. 69, *bimaculatus*, p. 70, *deprecabilis*, p. 71, Burma, *schönfeldti*, N. China, p. 72, FAUST, S. E. Z. li, n. spp.

Deracanthus faldermanni, validity of ; FAUST, p. 446, Hor. Ent. Ross. xxiv.

D. potanini, Ganssu, p. 446, *pallasi*, p. 448, *semenovi*, p. 449, Mongolia, FAUST, Hor. Ent. Ross. xxiv, n. spp.

Derelobus, n. g., *Strangaliadinorum*, p. 456, for *D. apogæus*, n. sp., Ganssu, p. 457 ; FAUST, Hor. Ent. Ross. xxiv.

Dermatodes, characters of the genera allied to ; FAUST, S. E. Z. li, p. 173.

Desiantha nigra, *major*, p. 321, *sericea*, p. 322, *maculata*, p. 323, *assimilis*, p. 324, *obscura*, p. 325, *parva*, p. 326, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Dialeptopus validus, p. 577, *lugubris*, p. 578, *obsoletus*, p. 579, *lindensis*, p. 580, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Dichotrachelus limakowiczi, Siebenburgen, FLACH, Wien. ent. Z. ix, p. 36, n. sp.

Dicomada rufa, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 586, n. sp.

Diglossotrox, characters discussed; FAUST, p. 432, Hor. Ent. Ross. xxiv.

D. mannerheimi (Pop.), Ordoss, FAUST, p. 432, Hor. Ent. Ross. xxiv, n. sp.

Donus fasciculatus n. var. *rostratus*; FAUST, p. 461, Hor. Ent. Ross. xxiv.

Dorytomus bajulus, Siberia, FAUST, Öfv. Finska Förh. xxxii, p. 90, n. sp.

✓ *Dyschænum*, n. g. (no position assigned, probably *Erirhinides*), for *D. flavum*, n. sp., S. Australia; BLACKBURN, p. 346, P. Linn. Soc. N.S.W. (2) v.

Dysostines crawfordi, p. 314, *ventralis*, p. 315, *pilosus*, p. 317, *punctiventris*, p. 319, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Echinocnemus subcylindricus referred to *Pachytychius*; REITTER, Wien. ent. Z. ix, p. 146.

E. subcylindricus, Askhabad, REITTER, p. 126, Verh. Ver. Brünn, xxvii, n. sp.

Ectatorhinus alatus, Sumatra, ROELOFS, Notes Leyd. Mus. xii, p. 207, n. sp.

✓ *Elytrocheilus*, n. g., *Celeuthetinarum*, p. 182, for *E. helenæ*, n. sp., N. Guinea, p. 183; FAUST, S. E. Z. li.

Emplexis notata, p. 332, *gravis*, p. 333, *munda*, p. 334, *assimilis*, p. 335, *albosignata*, *umbrosa*, p. 336, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

✓ *Empolis*, n. g., *Erirhinides*, near *Aoplocnemis*, p. 342, for *E. angustatus*, n. sp., S. Australia, p. 343; BLACKBURN, P. Linn. Soc. N.S.W. (2) v.

Endaliscus skalitzkyi = (*Endalus helferi*, Faust), the locality is India; FAUST, Deutsche e. Z. 1890, p. 264.

E. kirschi, E. India, FAUST, Deutsche e. Z. 1890, p. 265, n. sp.

Endymia effusa, Aru Is., FAUST, S. E. Z. li, p. 190, n. sp.

Ephimeropus, species described by R. in 1888, referred to *Hydronomus*; REITTER, Wien. ent. Z. ix, p. 146.

E. fenestratus, *flaveolus*, Askhabad, *syriacus*, Syria, REITTER, p. 125, Verh. Ver. Brünn, xxvii, n. spp.

Epicalus, Motsch., characters of; FAUST, Deutsche e. Z. 1890, p. 263.

Epiphaneus jucundus, Ordubad, REITTER, Deutsche e. Z. 1890, p. 156, n. sp.

Episomus quatuornotatus, E. India, DESBROCHERS, p. 212, J. A. S. B. lix, pt. 2, n. sp.

Esamus cylindricollis, Turkestan, REITTER, p. 123, Verh. Ver. Brünn, xxvii, n. sp.

Eugnaptus germanus, Guatemala, *picticollis*, Mexico, SHARP, p. 41, Biol. Centr. Am. Col. iv (3), n. spp.

Eutinopus irrisus, Ganssu, FAUST, p. 434, Hor. Ent. Ross. xxiv, n. sp.

Geranorhinus mongolicus, Mongolia, FAUST, p. 470, Hor. Ent. Ross. xxiv, n. sp.

Glaucopela varipes, S. Australia, BLACKBURN, p. 592, P. Linn. Soc. N.S.W. (2) v, n. sp.

Gronops syriacus, Caiffa, STIERLIN, MT. Schw. ent. Ges. viii, p. 247 ; *G. semenovi*, Ganssu, FAUST, p. 459, Hor. Ent. Ross. xxiv : n. spp.

Heilipus fimbriatus, Pasc., = (*anchoralis*, Kirsch) ; THALLWITZ, P. E. Soc. 1890, p. xiii.

✓*Heliophilus*, n. g., for part of *Sciaphilus* ; FAUST, S. E. Z. li, p. 249.

Heteromius clavipes, Ganssu, FAUST, p. 438, Hor. Ent. Ross. xxiv, n. sp.

Heteroptochus temperans, p. 451, *subsignatus*, p. 452, *faber*, p. 453, Ganssu, FAUST, Hor. Ent. Ross. xxiv, n. spp.

Homæonychus lepidus, Madagascar, FAUST, S. E. Z. li, p. 169, n. sp.

Hypera noscibilis, Ganssu, FAUST, p. 460, Hor. Ent. Ross. xxiv ; *H. sinuaticollis*, Mongolia, FAUST, Öfv. Finska Förh. xxxii, p. 73 ; *H. amasiensis*, Amasia, FAUST, Deutsche e. Z. 1890, p. 328 : n. spp.

Hylobius abietis, its ravages in Prussia ; Ent. Am. vi, p. 40.

Ileomus bohemani, Madagascar, FAUST, S. E. Z. li, p. 189, n. sp.

Ischnomias donkieri, Sierra Leone, FAUST, S. E. Z. li, p. 173, n. sp.

Laogenia dohrni, Philippines, p. 80, *dispar*, Ind. or., p. 81, FAUST, S. E. Z. li, n. spp.

Larinus ursus, metamorphoses ; XAMBEU, Le Nat. xii, p. 262.

L. brenskiei, Grecco, FAUST, Deutsche e. Z. 1890, p. 324 ; *L. depressirostris*, Caucasus, REITTER, Deutsche e. Z. 1890, p. 158 ; *L. potanini*, p. 467, *rivalis*, p. 469, Ganssu, FAUST, Hor. Ent. Ross. xxiv ; *L. liliputanus*, China, FAUST, Deutsche e. Z. 1890, p. 259 : n. spp.

✓*Lechrioderus*, n. g., *Barynotini*, p. 442, for *L. imbellus*, n. sp., Ganssu, p. 443 ; FAUST, Hor. Ent. Ross. xxiv.

Leiosomus cribrum, Sch., habits ; THOMAS, Ent. Nachr. xvi, p. 309.

Lepyurus ganglbaueri, Faust, habitat of ; REITTER, Wien. ent. Z. ix, p. 145.

L. dorsalis, Hungary, REITTER, Deutsche e. Z. 1890, p. 395, n. sp.

Leucodrusus pauper, Hungary, STIERLIN, MT. Schw. ent. Ges. viii, p. 244, n. sp.

✓*Lisotherium*, n. g., *Apioninarum*, for *L. hildebrandti*, n. sp., Madagascar ; FAUST, p. 194, S. E. Z. li.

Lissotarsus (sub *Baridius*) *alboguttatus*, Bris., = (*balassogloi*, Faust) ; FAUST, Deutsche e. Z. 1890, p. 335.

L. badeli, Biskra, FAUST, Deutsche e. Z. 1890, p. 334, n. sp.

Listroderes caudiculatus, Patagonia, FAIRMAIRE, N. Arch. Mus. (3) i, p. 131, n. sp.

Lithinus nigrocristatus, resemblance to twigs ; DOHRN, S. E. Z. li, p. 198.

Lixus vibex, Pall., = (*denudatus*, Zub., *kurelini*, Boh.) ; FAUST, S. E. Z. li, p. 111. *L. vibex* n. var. *pallasi* ; FAUST, p. 467, Hor. Ent. Ross. xxiv. *L. concavus*, Say, metamorphoses ; WEED, p. 232, Bull. Ohio Exp. Station (2) iii.

L. rectirostris, Biskra, FAUST, Deutsche e. Z. 1890, p. 334 ; *L. malatianus*, Malatia, FAUST, t. c. p. 327 ; *L. tigrinus*, Ordubad, REITTER, t. c. p. 160 ; *L. turanicus*, Askhabad, REITTER, p. 124, Verh. Ver. Brünn,

xxvii ; *L. isselii*, Assab, GESTRO, Ann. Mus. Genov. (2) vii, p. 64 ; *L. titubans*, p. 187, *encaustus*, p. 188, Madagascar, FAUST, S. E. Z. li ; *L. fairmairei*, China, FAUST, Deutsche e. Z. 1890, p. 260 : n. spp.

Lyterius ebena, Colombia, FAUST, S. E. Z. li, p. 193, n. sp.

Macrotarsus chinensis, Pekin, FAUST, Deutsche e. Z. 1890, p. 258 ; *M. validirostris*, *mongolicus*, Mongolia, FAUST, p. 72, Öfv. Finska Förh. xxxii : n. spp.

✓ *Marmarochelus*, n. g., near *Ectatorhinus*, for *M. atkinsoni*, n. sp., Andaman Is., DESBROCHERS, p. 217, J. A. S. B. lix, pt. 2.

Mecinus janthinus, habits ; DECAUX, Bull. Soc. Ent. Fr. 1890, p. lxxviii.

M. andalusicus, Spain, FAUST, Deutsche e. Z. 1890, p. 331, n. sp.

Meleus brevipennis, Hungary, p. 94, *negoianus*, Siebenbürgen, *setosus*, Bosnia, p. 95, REITTER, Deutsche e. Z. 1890, n. spp.

Meriphus raucus, p. 590, *lineatus*, p. 591, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Mesagroicus græcus, Greece, STIERLIN, p. 165, MT. Schw. ent. Ges. viii, p. 165, n. sp.

Microlarinus diecki, Andalusia, FAUST, S. E. Z. li, p. 111, n. sp.

Misophrice variabilis, *argentata*, p. 348, *submetallica*, p. 349, *oblonga*, p. 350, *munda*, *setulosa*, p. 351, *squamosa*, p. 352, *parallela*, p. 353, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Myloccerus chrysideus, Pasc., referred to *Cyphicerus* ; FAUST, S. E. Z. li, p. 66.

M. dohrni, China, FAUST, Deutsche e. Z. 1890, p. 262, n. sp.

Nanophyes fausti, Ordubad, REITTER, Deutsche e. Z. 1890, p. 161 ; *N. (Corinalia) alienus*, Mongolia, FAUST, Öfv. Finska Förh. xxxii, p. 103 ; *N. (C.) chinensis*, Ganssu, p. 474, *N. mongolicus*, *exiguus*, p. 475, Mongolia, FAUST, Hor. Ent. Ross. xxiv : n. spp.

Niphades tubericollis, Ganssu, FAUST, p. 469, Hor. Ent. Ross. xxiv, n. sp.

Notaris distans, Amdo, FAUST, p. 470, Hor. Ent. Ross. xxiv, n. sp.

✓ *Ochtharthrum*, n. g., *Cyphinarum*, for *O. speciosum*, n. sp., Madagascar, FAUST, S. E. Z. li, p. 171.

Ocladius sapeti, Assab, GESTRO, Ann. Mus. Genov. (2) vii, p. 66, n. sp.

Odosyllis intricata, Philippines, FAUST, p. 75, S. E. Z. li, n. sp.

Olanqa, generic characters, BLACKBURN, p. 588, P. Linn. Soc. N.S.W. (2) v.

O. maculata, Adelaide, BLACKBURN, p. 589, P. Linn. Soc. N.S.W. (2) v ; *O. lata*, S. Australia, BLACKBURN, p. 345, t. c. : n. spp.

Otiorhynchus cribricollis, habits in Australia ; KOEBELE, Bull. Dep. Agric. Ent. xxi, p. 12. *O. sulcatus* in New Zealand ; KINGSLEY, Tr. N. Z. Inst. xxii, p. 338. *O. (Arammichnus) strebloffi* n. var. *tenuimanus* ; FAUST, Öfv. Finska Förh. xxxii, p. 64.

O. collectivus, p. 153, *sparsiridis*, p. 154, Asturias, REITTER, Deutsche e. Z. 1890 ; *O. halbherri*, M. Baldo, STIERLIN, MT. Schw. ent. Ges. viii, p. 243 ; *O. corallipes*, Bosnia, *O. (Arammichnus) latifrons*, Syria, p. 164, *lupanensis*, Lugano, p. 165, STIERLIN, t. c. ; *O. (Cryphiphorus) nuncius*,

p. 321, *O. (Tournieria) lubriculus*, p. 322, *erroneus*, p. 323, Greece, FAUST, Deutsche e. Z. 1890; *O. perdurus, hebes*, Circassia, REITTER, Wien. ent. Z. ix, p. 196; *O. (Arammiclmus) beatus*, Mongolia, FAUST, Öfv. Finska Förh. xxxii, p. 65 : n. spp.

Oxyopisthen pygidiale, Aruwimi River, SIMPSON in Jameson Story Rear Column, p. 425, n. sp.

Pachycerus costulatus, China, FAUST, Deutsche e. Z. 1890, p. 258, n. sp.

Pachyrrhynchus chlorites, Chev., = (*rutilans*, Behr.), *congestus*, Pasc., = (*luteoguttatus*, Chev.), *gemmatus*, Wat., = (*ignipes*, Chev.), *lorquini*, Chev., = (*flavopunctatus*, Kr.) ; AURIVILLIUS, Ent. Tidskr. xi, p. 88.

✓*Paophilus*, n. g., near *Sciaphilus*, for *S. afflatus*, Boh., &c.; FAUST, S. E. Z. li, p. 249.

✓*Parazygops*, n. g., p. cxxix, for *Zygops, luctuosus*, n. sp., Cayenne, p. cxxviii ; DESBROCHERS, Bull. Soc. Ent. Fr. 1890.

Perissops maculosus, p. 75, *sobrinus*, p. 76, N. Guinea, FAUST, S. E. Z. li, n. spp.

Phacephorus turbatus, Amdo, p. 440, *decipiens*, Ganssu, pp. 441, FAUST, Hor. Ent. Ross. xxiv, n. spp.

Phyllobius piliferus, fæculentus, canus, characters noticed, p. 109, *P. calcaratus* n. var. *schilskyi*, p. 1110, FAUST, S. E. Z. li. *P. lindemanni*, characters of ; FAUST, Öfv. Finska Förh. xxxii, p. 66.

P. romanus, Italy, FAUST, Deutsche e. Z. 1890, p. 330; *P. pallidipes*, Caucasus, REITTER, Deutsche e. Z. 1890, p. 154; *P. sahlbergi*, Siberia, FAUST, Öfv. Finska Förh. xxxii, p. 67 : n. spp.

Phytonomus obediens, Ganssu, FAUST, p. 461, Hor. Ent. Ross. xxiv ; *P. distinctus*, p. 74, *imparilis*, p. 75, Mongolia, FAUST, Öfv. Finska Förh. xxxii : n. spp.

Piazomias faldermanni, p. 435, *imitator*, p. 437, Ganssu, FAUST, Hor. Ent. Ross. xxiv, n. spp.

Plagiographus fasciculosus, Andalusia, REITTER, Deutsche e. Z. 1890, p. 158, n. sp.

Platyomus mollis, Paraguay, FAUST, S. E. Z. li, p. 175, n. sp.

Pleurocleonus sollicitus, Gyll., = (*sexmaculatus*, Fahrs.), *P. oblitteratus*, characters noticed ; FAUST, S. E. Z. li, p. 115.

Polydrusus korbi, Andalusia, STIERLIN, MT. Schw. ent. Ges. viii, p. 241, n. sp.

Polyphrades satellites, W. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 575, n. sp.

Poteriophorus vandepolli, Sumatra, p. 238, *sellatus*, Perak, p. 239, ROELOFS, Notes Leyd. Mus. xii, n. spp.

Psalidium, revision of ; FAUST, Hor. Ent. Ross. xxiv, pp. 281, &c.

P. neglectum, Amasia, p. 295, *redtenbacheri*, p. 297, *senectum*, p. 298, *strenuum*, p. 299, *difficile*, p. 300, Syria, *frivaldszkyi*, Thessaly, p. 303, *concinnum*, Salonica, p. 306, FAUST, Hor. Ent. Ross. xxiv, n. spp.

Pseudocleonus dauricus, Gebl., = (*obsoletus*, Gyll.) ; FAUST, S. E. Z. li, p. 115. *P. panderi*, Fisch., note on ; FAUST, Öfv. Finska Förh. xxxii, p. 89.

- Pseudomeira neapolitana*, Naples, FAUST, Deutsche e. Z. 1890, p. 329, n. sp.
- Pterocolus auricollis*, Panama, pl. ii, fig. 16, *grossus*, Mexico, SHARP, p. 44, Biol. Centr. Am. Col. iv (3), n. spp.
- Ptochus indemnis*, Ganssu, FAUST, p. 431, Hor. Ent. Ross. xxiv, n. sp.
- ✓*Reitteria*, n. g., near *Laparocerus*, for *Sciaphilus claviceps*, Reitter ; FAUST, p. 250, S. E. Z. li.
- Rhamphus australis, distinguendus*, S. Australia, BLACKBURN, p. 93, Tr. R. Soc. S. Austr. xiii, n. spp.
- Rhina lineata*, Andaman Is., DESBROCHERS, p. 218, J. A. S. B. lix, pt. 2, n. sp.
- ✓*Rhinodontus*, n. g., *Synirmorum*, for *R. ignarus*, n. sp., Ganssu ; FAUST, p. 455, Hor. Ent. Ross. xxiv.
- Rhinoscapha* and *Celebia*, differential characters ; FAUST, S. E. Z. li, p. 180.
- R. tricolor*, p. 175, *richteri*, p. 176, New Guinea, *vana*, Bangkei, p. 177, FAUST, t. c., n. spp.
- Rhynchites emgei*, ♀ described ; STIERLIN, MT. Schw. ent. Ges. viii, p. 165. *R. trojanus* and *rectirostris* noticed ; FAUST, S. E. Z. li, p. 115.
- R. aeneo-niger*, p. 426, *pelliceus*, p. 427, China, FAUST, Hor. Ent. Ross. xxiv ; *R. flavirostris*, E. India, DESBROCHERS, p. 213, J. A. S. B. lix, pt. 2 : n. spp.
- Rhytidosomus filirostris*, Reitt., referred to *Ceuthorhynchus* ; FAUST, S. E. Z. li, p. 115.
- R. weisei*, Siberia, FAUST, Öfv. Finska Förh. xxxii, p. 98, n. sp.
- Rhytirhinus martini*, Oran, FAUST, Deutsche e. Z. 1890, p. 333 ; *R. cruciatus*, Morocco, STIERLIN, MT. Schw. ent. Ges. viii, p. 245 : n. spp.
- Scleropterus verecundus*, Siberia, FAUST, Öfv. Finska Förh. xxxii, p. 99, n. sp.
- Sciaphilus, Chiloneus*, and allied genera discussed ; FAUST, S. E. Z. li, pp. 247-252.
- Sciaphilus claviceps*, Ordubad, REITTER, Deutsche e. Z. 1890, p. 155 (cf. *Reitteria, supra*), n. sp.
- Sibinia syriaca*, Syria, FAUST, Deutsche e. Z. 1890, p. 328, n. sp.
- Sitones hispidulus*, spreading of in N. America ; SCHWARZ, P. E. Soc. Wash. i, p. 248.
- Sitona onerosa*, Siberia, FAUST, Öfv. Finska Förh. xxxii, p. 71 ; *S. pallidicornis*, Biskra, FAUST, Deutsche e. Z. 1890, p. 332 ; *S. præambula*, Ganssu, FAUST, p. 445, Hor. Ent. Ross. xxiv : n. spp.
- Stephanocleonus fossulatus*, n. var. *connexus* ; FAUST, S. E. Z. li, p. 114.
- S. potanini*, Ganssu, FAUST, p. 465, Hor. Ent. Ross. xxiv ; *S. setinasus*, p. 76, *opportunus*, p. 78, *jucundus*, p. 80, *eruditus*, p. 82, *hammarströmi*, p. 83, *vagabundus*, p. 85, *sahlbergi*, p. 86, *ehnbergi*, p. 87, Siberia and Mongolia, FAUST, Öfv. Finska Förh. xxxii : n. spp.
- Stigmatrachelus isabellinus*, n. var. *subfasciatus* ; FAUST, S. E. Z. li, p. 167.
- S. fusco-signatus*, p. 167, *setulosus*, p. 169, Madagascar, FAUST, S. E. Z. li : n. spp.

Stolatus horridus, Ordubad, REITTER, Deutsche e. Z. 1890, p. 159, n. sp.

Stomodes kruperi, Greece, FAUST, Deutsche e. Z. 1890, p. 323, n. sp.

Strophomorphus fausti, Armenia, p. 155, *pholicoides*, Ordubad, p. 156, REITTER, Deutsche e. Z. 1890, n. spp.

↓ *Symbothynus*, n. g. (*Erirhinides*), p. 582, for *S. squalidus*, n. sp., S. Australia, p. 583, BLACKBURN, P. Linn. Soc. N.S.W. (2) v.

↓ *Synuptocephalus*, n. g., *Tanyrhynchinarum*, p. 185, for *S. kolbei*, n. sp., Zanzibar, p. 186; FAUST, S. E. Z. li.

Synolobus modestus, Ganssu, FAUST, p. 450, Hor. Ent. Ross. xxiv, n. sp.

Tanymecus obsoletus, n. n. for *fausti*, R., REITTER, Wien. ent. Z. ix, p. 146; *T. excursor*, Ganssu, FAUST, p. 439, Hor. Ent. Ross. xxiv; *T. fausti*, Askhabad, REITTER, p. 122, Verh. Ver. Brünn, xxvii: n. spp.

Trachyphlaeus elephas, Corfu, REITTER, Deutsche e. Z. 1890, p. 394; *T. stierlini* (no locality), STIERLIN, MT. Schw. ent. Ges. viii, p. 166; *T. sordidus*, Ganssu, FAUST, p. 430, Hor. Ent. Ross. xxiv: n. spp.

Tychius reichei, Corfu, FAUST, Deutsche e. Z. 1890, p. 325; *T. irregularis*, S. Russia, *rusticus*, p. 93, *irritans*, p. 94, *oberti*, p. 95, Siberia, FAUST, Öfv. Finska Förh. xxxii: n. spp.

↓ *Xenostes*, n. g. (*Lithinidæ*), for *X. jamesoni*, n. sp., Aruwimi River; SIMPSON, in Jameson Story Rear Column, p. 424.

Zygops argenteiventris, *reticulata*, Amazons, *consanguinea*, Cayenne, *interrupto-lineata*, p. lxxx, *anchorifera*, *lacrymosa*, *angustula*, *muricata*, *pluriguttata*, p. lxxxi, Amazons, *centromaculata*, Cayenne, *murina*, p. cxi, *inermis*, *tricolor*, Amazons, *lutro*, Cayenne, *biguttata*, Brazil, p. cxii, *4-maculata*, p. cxxvi, *tripartita*, *nebulosa*, *minuta*, *vinitor*, p. cxxvii, *brevis*, *mixta*, *marmoreus*, Cayenne, p. cxxviii, DESBROCHERS, Bull. Soc. Ent. Fr. 1891, n. spp.

SCOLYTIDÆ.

[Cf. DIETZ (168), LØVENDAL (490, 491), REITTER (644, 648), SCHEVYREW (732), SCUDDER (754), TEPLOUCHOW (846).]

Synonymical remarks on Danish *Tomicides*; LØVENDAL, Ent. Med. ii, pp. 206-211.

Chramesus icoria, Lec., larva and burrows of; SMITH, Ent. Am. vi, p. 53, cuts.

Crypturgus filum, Turkestan, REITTER, p. 126, Verh. Ver. Brünn, xxvii, n. sp.

Dendroctonus, the N. American species monographed; DIETZ, Tr. Am. Ent. Soc. xvii, p. 27, &c.

D. approximatus, New Mexico, DIETZ, p. 31, Tr. Am. Ent. Soc. xvii, n. sp.

Hylesinus bicolor, metamorphoses, DECAUX, Bull. Soc. Ent. Fr. (6) x, p. xxxv. *H. piniperdu* breeding in *Larix europæa*; SOMERVILLE, P. R. Soc. Edinb. xvii, pp. 255 & 256.

Hypothenemus eruditus, dissimilis, erectus, hispidulus, note on ; SMITH, Ent. Am. vi, p. 54.

Lymanator, characters of ; *Dryocates aceris, eichoffi, nitidicollis* referred to it ; *L. coryli* = (*sepicola*, Löw.) : REITTER, Deutsche e. Z. 1890, p. 175. *L. sepicola*, full description with figure ; LØVENDAL, Ent. Med. ii, pp. 69 & 70, pl. i, figs. 1 a, b.

Phlæophagus, habits of ; CHITTENDEN, Ent. Am. vi, p. 99.

Phlæophthorus rhododactylus, habits and larva ; LØVENDAL, Ent. Med. ii, pp. 196-205.

Scolytus and *Phlæosinus*, note on the coupling of ; DECAUX, p. cxxiv, Bull. Soc. Ent. Fr. 1890.

Scolytus ensifer, habits ; DECAUX, p. cxxv, Bull. Soc. Ent. Fr. 1890.

S. fasciatus, Ordubad, REITTER, Deutsche e. Z. 1890, p. 395 ; *S. ventrosus*, Siberia, *unispinosus*, Tiflis, SCHEVYREW, Bull. Ac. Pet. xxxiii, p. 470 : n. spp.

Stenoscelis brevis, habits of ; CHITTENDEN, Ent. Am. vi, p. 99.

Thamnurgus varipes, habits noticed ; REITTER, Wien. ent. Z. ix, p. 13.

Tomicus judeichii, habits, characters of sexes, &c. ; TEPLOUCHOW, Bull. Soc. Mosc. 1890, pp. 252 & 268, pl. ix.

T. elongatus, Denmark, LØVENDAL, Ent. Med. ii, p. 61, n. sp.

Trypodendron signatum perforating barrel staves ; BLANDFORD, Kew Bull. No. 45, pp. 181-186, woodcuts.

Xyleborus dispar and *pyri*, identity of and food of larva discussed ; Ins. Life, ii, p. 279.

BRENTHIDÆ.

[Cf. DESBROCHERS (164), SENNA (774).]

Achrionota setigera, Celebes, SENNA, Bull. Ent. Ital. xxi, p. 102, n. sp.

Acratus propinquus, Amazons, SENNA, Bull. Ent. Ital. xxi, p. 108, n. sp.

Aprostoma, Guer., referred to the group *Clavicornia* ; DESBROCHERS, p. 221, J. A. S. B. lix, pt. 2.

Arrhenodes elegans, n. var. *sexvittatus*, SENNA, p. 104, Bull. Ent. Ital. xxi.

Brenthus anchorago, varietal note ; SENNA, Bull. Ent. Ital. xxi, p. 107.

Claderes mexicanus, n. var. *tristis* ; SENNA, Bull. Ent. Ital. p. 107.

Megacerus quatuordecimnotatus, Andaman Is., DESBROCHERS, p. 219, J. A. S. B. lix, pt. 2, n. sp.

Miolispa ceylonica, Ceylon, DESBROCHERS, p. 222, J. A. S. B. lix, pt. 2, n. sp.

* *Pseudocyphagonus*, n. g., near *Cyphagonus*, p. 221, for *P. squamiger*, n. sp., Andaman Is., p. 222 ; DESBROCHERS, J. A. S. B. lix, pt. 2.

Trachelizus aureopilosus, Amazons, SENNA, Bull. Ent. Ital. p. 105, n. sp.

BRUCHIDÆ, ANTHRIBIDÆ.

[Cf. BAUDI (35, 36), OLLIFF (583), SCUDDER (754).]

Addendum to Baudi's monograph of European *Bruchidæ* ; BAUDI (35) ; supplement, *id.* (36).

Caryoborus lacerdæ, emergence in England ; SHARP, P. E. Soc. 1890, p. xiv.

↓ *Metadoticus*, n. g., *Anthrribidæ*, *Phlæophilides*, for *M. pestilens*, n. sp., Melbourne ; OLLIFF, p. 75, Rec. Austral. Mus. i.

Mytabris rubiginosa, Desbr., ♂ = (*lamellicornis*, Baudi) ; BAUDI, Deutsche e. Z. 1890, pp. 339.

M. caliginosa, Hamburg, BAUDI, Nat. Sicil. ix, p. 211, ? n. sp. ; *M. bythinocera*, Ordubad, REITTER, Wien. ent. Z. ix, p. 197, n. sp.

Urodon scaber, Syria, BAUDI, p. 345, Deutsche e. Z. 1890, and Nat. Sicil. ix, p. 213, n. sp.

CERAMBYCIDÆ.

[*Cf.* AURIVILLIUS (22), BELON (43, 44), BLACKBURN (60, 66), CASEY (122), BROGNIART (92, 94), DUVIVIER (200), FAIRMAIRE (238), FLACH (264), GAHAN (290, 291, 292, 293, 294, 295, 894), GANGLBAUER (297), GESTRO (300), JAKOWLEFF (401), LAMEERE (471, 472, 473), NONFRIED (571), OLLIFF (580, 583), PIC (606, 607), POLL (613, 614, 616), REITTER (658, 659, 660), RITSEMA (699, 700, 701), RIVERS (705), SCHÖNFELDT (749), SEMENOW (770), STARCK (830), WATERHOUSE (892).] ३१५

Acanthoderes clavipes, n. var. *lucidus* ; STARCK, Wien. ent. Z. ix, p. 71.

Acmæops lisa, Washington, LENG, Ent. Am. vi, p. 108, n. sp.

↓ *Æolesthes*, n. g., p. 250, for some species of *Pachydissus* and *Neocerambyx*, with *Æ. ampliata*, Duke of York Is., p. 253, *perplexa*, Siam, p. 254, *sinensis*, China, p. 255, n. spp. ; GAHAN, Ann. N. H. (6) vi.

Erenia trigonia figured ; WATERHOUSE, Aid, pl. clxxxviii, fig. 4.

Allogaster unicolor, Africa, GAHAN, Tr. E. Soc. 1890, p. 300, n. sp.

Alphitopola janus, Centr. Africa, BATES, P. Z. S. 1890, p. 489 ; *A. octomaculata*, *vitticollis*, p. 316, *pascoei*, p. 317, pl. ix, fig. 4, L. Nyassa, GAHAN, Tr. E. Soc. 1890 : n. spp.

↓ *Amphistylus*, n. g., near *Spalacopsis*, for *S. pauli*, Fairm. ; GAHAN, Tr. E. Soc. 1890, p. 325.

Anaglyptus kanssuensis, Kanssu, GANGLBAUER, p. 71, Hor. Ent. Ross. xxiv, n. sp.

Anastetha raripila figured ; WATERHOUSE, Aid, pl. clxxxviii, fig. 7.

Ancylistes bellus, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 465, n. sp.

↓ *Anæme*, n. g. (*Monodesminæ*), for *Oeme nigrita*, Chev. ; GAHAN, Tr. E. Soc. 1890, p. 299.

Anoplistes mongolicus, Mongolia, GANGLBAUER, p. 75, Hor. Ent. Ross. xxiv, n. sp.

Anoplognathus punctulatus, Queensland, OLLIFF, Rec. Austral. Mus. xi, p. 72, pl. x, fig. 8, n. sp.

Anoplomerus, revision of the genus, with descriptions ; BELON, Ann. Soc. L. Lyon (n.s.) xxxvi, pp. 291-304.

A. buqueti, Brazil, BELON, Bull. Soc. Ent. Fr. (6) x, p. ix, n. sp.

Aphrodisium planicolle, p. 155, *cribricolle*, p. 157, Sikkim, POLL, Notes Leyd. Mus. xii, n. spp.

- Apiogaster similis*, Nyassa, GAHAN, Tr. E. Soc. 1890, p. 310, n. sp.
Aromia moschata, metamorphoses ; PLANET, Le Nat. xii, p. 97.
Arrhythmus punctatus, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 461, n. sp.
Artelida pernobilis, Madagascar, POLL, Notes Leyd. Mus. xii, p. 8, n. sp.
Atossa bipartita, Borneo, RITSEMA, p. 250, Notes Leyd. Mus. xii, n. sp.
Bangalia, n. g., *Prosopoceridarum*, p. cxcvi, for *B. stiriaca* n. sp., Old Calabar, p. cxcvii, DUVIVIER, C.R. Ent. Belg. 1890, and Ann. Ent. Belg. xxxiv, pp. 34-36.
Batocera woodlarkiana, note on ; POLL, Notes Leyd. Mus. xii, p. 7.
B. inconspicua, New Guinea, POLL, Notes Leyd. Mus. xii, p. 5 ; *B. polli*, Ceylon, GAHAN, Ann. N. H. (6) v, p. 55, pl. vii, fig. 2 : n. spp.
Belodera genei, metamorphoses ; XAMBEU, p. 277, Rev. d'Ent. ix.
B. densevestita, E. Africa, FAIRMAIRE, p. 352, Ann. Soc. Ent. Fr. (6) x, n. sp.
Biasmia guttata, figured ; WATERHOUSE, Aid, pl. clxxxviii, fig. 3.
Bubalotragus, n. subg. of *Ischioplitis*, for *I. möllendorffi*, n. sp., Bismarck Archipelago ; FLACH, Wien. ent. Z. ix, p. 239, pl. iii, figs. 1-6.
Cacia signata, Ceylon, GAHAN, Ann. Nat. Hist. (6) v, p. 56, n. sp.
Calamobius filum, metamorphoses ; XAMBEU, p. 280, Rev. d'Ent. ix.
Callichroma barbiventris, Centr. Africa, BATES, P. Z. S. 1890, p. 486 ;
C. fuligineum, Abyssinia, GAHAN, Tr. E. Soc. 1890, p. 308 : n. spp.
Callidium campestris, Fald., referred to *Hesperophanes* ; GANGLBAUER, p. 65, Hor. Ent. Ross. xxiv. *C. glabratum*, Charp., metamorphoses ; XAMBEU, p. 274, Rev. d'Ent. ix.
Callipogon limoinei n. var. *kraatzi*, n. sp. (*sic*), Ecuador ; NONFRIED, S. E. Z. li, p. 19.
Cantharocnemus obockianus, Africa, FAIRMAIRE, p. 549, Ann. Soc. Ent. Fr. (6) x, n. spp.
Cartallum ebulinum, metamorphoses ; XAMBEU, Rev. d'Ent. ix, p. 58.
Cartodera, table of characters of species of ; REITTER, Wien. ent. Z. ix, pp. 243-246.
C. circassica, *umbripennis*, p. 245, *colchica*, p. 246, Caucasus, REITTER, Wien. ent. Z. ix, n. spp.
Cedemon, n. g., p. 462, near *Phymasterna*, for *C. tristis*, n. sp., Madagascar, p. 463 ; GAHAN, Ann. N. H. (6) vi.
Ceresium procerum, Lord Howe I., OLLIFF, Rec. Austral. Mus. p. 74, pl. x, fig. 3 ; *C. rufum*, E. India, LAMEERE, p. ccci, C.R. Ent. Belg. 1890 ; *C. simile*, Bonin Is., GAHAN, Ann. N. H. (6) v, p. 169 : n. spp.
Cereopsius apicalis, referred to *Thermonotus* ; RITSEMA, p. 248, Notes Leyd. Mus. xii.
Ceroplesis elegans, Yemen, GESTRO, Ann. Mus. Genov. (2) vii, p. 70 ;
C. signata, E. Africa, WATERHOUSE, Ann. N. H. (6) vi, p. 108 : n. spp.
Charicsthes aruwimiu, Centr. Africa, p. 489, *latissima*, W. Africa, p. 490, BATES, P. Z. S. 1890, n. spp.
Chrysaperda collaris, figured ; WATERHOUSE, Aid, pl. clxxxviii, fig. 8.

Cladopalpus hageni, note on sexual distinctions and systematic position ; POLL, Notes Leyd. Mus. xii, p. 141.

Cleonice vestita, Th., = (*Seuthes sericatus*, Pasc.), GAHAN, p. 247, Ann. N. H. (6) vi.

Cleroclytus, cf. *Eudermes*, *infra*.

Closterus longiramis, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 458 ; *C. oculatus*, p. 297, *serraticornis*, p. 298, Madagascar, GAHAN, Tr. E. Soc. 1890 : n. spp.

Clyanthus acanthocerus, Kanssu, p. 68, *obliteratus*, Mongolia, p. 70, GANGLBAUER, Hor. Ent. Ross. xxiv, n. spp.

Clytus contractifrons, Centr. Africa, BATES, P. Z. S. 1890, p. 487 ; *C. quadraticollis*, Kanssu, GANGLBAUER, p. 66, Hor. Ent. Ross. xxiv ; *C. formicoides*, *funëbris*, E. India, LAMBEERE, p. ccxii, C.R. Ent. Belg. 1890 ; *C. (Clytanthus) madoni*, Palestine, PIC, p. ccxi, Bull. Soc. Ent. Fr. 1890 : n. spp.

Celodon : note on the genus ; *C. cinereum*, Serv., = (*Hamaticherus servus*, White) ; GAHAN, Ann. N. H. (6) vi, p. 248.

Coloborhombus auricomus, Java, RITSEMA, Notes Leyd. Mus. xii, p. 247, n. sp.

Compsodorcadion tibiale, Lake Issyk-kull, p. 250, *cephalotes*, Lake Balkhach, p. 252, JAKOWLEFF, Hor. Ent. Ross. xxiv, n. spp.

Compsomera nigricollis, Mamboia, GAHAN, Tr. E. Soc. 1890, p. 305, n. sp.

Coptops quadrimaculata, Nilghiri Hills, GAHAN, Ann. N. H. (6) v, p. 57, pl. vii, fig. 3, n. sp.

✓*Coscinesthes*, n. g., *Monohammides*, near *Eutæniopsis*, for *C. porosa*, n. sp., China ; BATES, Ent. xxiii, pp. 246 & 247.

Cylindrepomus virgatus, Himalaya, GAHAN, p. 61, Ann. N. H. (6) v, n. sp.

Cyriocrates zonator, Thoms., referred to *Melanauster* ; RITSEMA, Notes Leyd. Mus. xii, p. 180.

Demnassa dichotoma, Newm., = (*Zygocera macleayi*, Pasc.) ; BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 131.

Diadelia xfasciata, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 465, n. sp.

Dichostates ? *bimaculatus*, Centr. Africa, BATES, p. 491, P. Z. S. 1890 ; *D. coquereli*, Africa, FAIRMAIRE, p. 552, Ann. Soc. Ent. Fr. (6) x : n. spp.

Didymocantha nigra, W. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 130, n. sp.

Disterna and *Zygocera*, notes on characters of ; BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 154.

✓*Docus*, n. g., near *Planodema*, p. 321, for *D. femoratus*, n. sp., Masailand, p. 322, pl. ix, fig. 7 ; GAHAN, Tr. E. Soc. 1890.

✓*Dolichaspis*, n. g., near *Mecaspis*, for *D. scutellata*, n. sp., Angola ; GAHAN, Tr. E. Soc. 1890, p. 306.

Dolichoprosopus maculatus, note on variation ; POLL, Notes Leyd. Mus. xii, p. 140.

Domitia anea and *viridipennis*, characters of noticed ; GAHAN, Tr. E. Soc. 1890, p. 328.

Dorcaschema nigrum, Say, habits ; HAMILTON, Canad. Ent. xxii, p. 239.

Dorycera demeusei, Congo, DUVIVIER, p. cxvii, C.R. Ent. Belg. 1890, and Ann. Ent. Belg. xxxiv, p. 26, n. sp.

Elaphidion mutatum, Cuba, Florida, GAHAN, p. 32, Ann. N. H. (6) vi, n. sp.

✓ *Elasmostoma*, n. g., *Dorcadionina*, p. 73, for *E. insulana*, n. sp., Lord Howe I. ; OLLIFF, Rec. Austral. Mus. i, p. 74, pl. x, fig. 7.

Elateropsis, note on, suggesting that the white-striped forms are females of the glossy forms ; *E. fuliginosa*, Fab., = (*subpunctata*, Chev.) ; GAHAN, pp. 28 & 29, Ann. N. H. (6) vi.

E. punctata, Cuba, p. 27, *rugosa*, hab. ♀, p. 28, *scabrosa*, = (*fuliginosa*, Chev., nec Fab.), p. 29, *reticulata*, p. 30, Cuba, GAHAN, Ann. N. H. (6) vi, n. spp.

Emphreus, position noticed ; GAHAN, Tr. E. Soc. 1890, p. 313.

Enispia ? *cleroides*, N. India, GAHAN, pl. vii, fig. 7, p. 63, Ann. N. H. (6) v, n. sp.

Enneaphyllus rossi, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 127, n. sp.

Ergates neomexicanus, N. America, CASEY, p. 491, Ann. N. York Ac. v, n. sp.

Erythrestes bouringii figured ; WATERHOUSE, Aid, pl. clxxxviii, fig. 1.

Euderces, Lec., = (*Cleroclytus*, Kr.) ; GANGLBAUER, p. 72, Hor. Ent. Ross. xxiv.

Eumimetes johannæ, Johanna I., GAHAN, Tr. E. Soc. 1890, p. 322 ; *E. albisparsus*, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 464 : n. spp.

Eunidia simplex, Nilghiri Hills, GAHAN, p. 64, Ann. N. H. (6) v, n. sp.

Euporus strangulatus n. var. *purpureipes* ; BATES, P. Z. S. 1890, p. 487.

Eurybatus inexpectatus, Java, RITSEMA, Notes Leyd. Mus. xii, p. 135, n. sp.

Exocentrus occidentalis, Chev., referred to *Sumelis*, Th. ; GAHAN, Ann. Ent. Belg. xxxiv, p. 39.

E. josephi, Congo, DUVIVIER, p. cxvii, C.R. Ent. Belg. 1890, and Ann. Ent. Belg. xxxiv, p. 38, n. sp.

Gaurotes adelpha, Sze-tschuan, GANGLBAUER, p. 47, Hor. Ent. Ross. xxiv, n. sp.

✓ *Gaurotina*, n. g., near *Gaurotes*, p. 49, for *G. superba*, n. sp., Kanssu, p. 50 ; GANGLBAUER, Hor. Ent. Ross. xxiv.

✓ *Geopronus*, n. g. (*Meroscelisides*, near *Rhodocharis*), p. cxxi, for *G. syntheticus*, n. sp., Rio Janeiro, p. cxxii ; LAMEERE, C.R. Ent. Belg. 1890.

Glaucytes basalis, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 462, n. sp.

Gnatholea simplex, N. India, GAHAN, Ann. N. H. (6) v, p. 53, n. sp.

Haplohammus nanus, Kanssu, GANGLBAUER, p. 81, Hor. Ent. Ross. xxiv, n. sp.

✓ *Harmosternus*, n. g., near *Elateropsis*, p. 30, for *H. anthracinus*, n. sp., Cuba, p. 31 ; GAHAN, Ann. N. H. (6) vi.

✓*Hercodera*, n. g., near *Atesta*, for *H. fasciata*, n. sp., Masai-land, pl. ix, fig. 1 ; GAHAN, p. 302, Tr. E. Soc. 1890.

Hesthesis acutipennis figured ; WATERHOUSE, Aid, pl. clxxxviii, fig. 5.

Heterogaster semifemoratum, Chev., referred to *Paroeme*, Aur. ; GAHAN, p. 301, Tr. E. Soc. 1890.

✓*Hexarrhopala*, n. g., near *Apiogaster*, p. 308, for *H. apicalis*, n. sp., Nyassa, p. 309, pl. ix, figs. 3 & 3a ; GAHAN, Tr. E. Soc. 1890.

✓*Hormathus*, n. g., near *Ibidion*, p. 32, for *H. cinctellus*, n. sp., St. Domingo, p. 33 ; GAHAN, Ann. N. H. (6) vi.

✓*Hypargyra*, n. g., near *Ionthodes*, p. 303, for *H. cribripennis*, n. sp., Mamboia, p. 304, pl. ix, fig. 2 ; GAHAN, Tr. E. Soc. 1890.

Hypatium splendidum, Mpwapwa, GAHAN, Tr. E. Soc. 1890, p. 306, n. sp.

Idactus spinipennis, Abyssinia, p. 311, *elliotti*, Madagascar, *maculicornis*, E. Africa, p. 312, GAHAN, Tr. E. Soc. 1890, n. spp.

✓*Imerinus*, n. g., near *Phlyctænodes*, for *I. granuliferus*, n. sp., Madagascar ; GAHAN, p. 460, Ann. N. H. (6) vi.

Ischioplites, see *Bubalotragus*.

✓*Ischnorrhabda*, n. g., near *Exilia*, p. 61, for *I. macilenta*, n. sp., Sze-tsichuan, p. 63 ; GANGLBAUER, Hor. Ent. Ross. xxiv.

✓*Ischnostrangalis*, n. subg. of *Leptura*, p. 55, for *L. (I.) semenowi*, n. sp., Sze-tsichuan, p. 53 ; GANGLBAUER, Hor. Ent. Ross. xxiv.

Isse punctata figured ; WATERHOUSE, Aid, pl. clxxxviii, fig. 2.

✓*Kunbir*, n. g., *Cleomeninarum*, for *K. telephoroides*, n. sp., E. India ; LAMEERE, p. cxxiii, C.R. Ent. Belg. 1890.

Lasiopezus rufodorsatus, Obock, FAIRMAIRE, p. 551, Ann. Soc. Ent. Fr. (6) x, n. sp.

Leptura virens, n. var. *fusco-pubens* ; REITTER, Deutsche e. Z. 1890, p. 164. *L. tenuis*, n. var. *signaticornis* ; GANGLBAUER, Hor. Ent. Ross. xxiv, p. 52.

L. (Vadonia) atramentaria, Kanssu, GANGLBAUER, p. 59, Hor. Ent. Ross. xxiv, n. sp.

Mallocera oblita, p. clxxii, *lacordairei*, p. clxxiii, Brazil, LAMEERE, C.R. Ent. Belg. 1890, n. spp.

Mallodon bituberculatum, Beauv., queried as ♀ of *maxillosum*, Dr. ; GAHAN, p. 24, Ann. N. H. (6) vi.

Mallosia, table of characters of the European species ; REITTER, Wien. ent. Z. ix, p. 241.

M. herminæ, p. 241, *angelicæ*, p. 242, Caucasus, REITTER, t. c., n. spp.

Massicus fryi, Borneo, GAHAN, Ann. N. H. (6) vi, p. 260, n. sp.

Mastododera nodicollis and *lateralis*, distinctions of ; DOHRN, S. E. Z. li, p. 196.

M. ? simplicicollis, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 462, n. sp.

Mecaspis mapanjæ, Cameroons, *femorata*, Sierra Leone, AURIVILLIUS, Ent. Tidskr. xii, p. 205 ; *M. mina*, Sierra Leone, GAHAN, Tr. E. Soc. 1890, p. 305 : n. spp.

Melanauster nobilis, Kanssu, GANGLBAUER, p. 82, Hor. Ent. Ross. xxiv, n. sp.

- ✓*Metobrium*, n. g. (*Obrinæ*), for *Obriacum elegans*, Fairm. ; GAHAN, Tr. E. Soc. 1890, p. 303.
- Microtragus assimilis*, p. 741, *albidus*, p. 742, *maculatus*, p. 743, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iv, n. spp.
- Mispila obscura*, Nilghiri Hills, GAHAN, p. 62, Ann. N. H. (6) v, n. sp.
- Monohammus æstheticus*, p. 8, *artius*, p. 9, Queensland, OLLIFF, P. Linn. Soc. N.S.W. (2) v, n. spp.
- ✓*Morimospasma*, n. g., near *Oriathus*, p. 78, for *M. paradoxum*, n. sp., Kanssu, p. 80 ; GANGLBAUER, Hor. Ent. Ross. xxiv.
- Necydalis sericella*, Sze-tschuan, GANGLBAUER, p. 46, Hor. Ent. Ross. xxiv ; *N. barbaræ*, California, RIVERS, Ent. Am. vi, p. 112 : n. spp.
- Neocerambyx cantori*, Hope, referred to *Cerambyx* ; GAHAN, p. 249, Ann. N. H. (6) vi.
- Neodorcadion potanini*, Ordos, p. 245, *intermedium*, Gobi, p. 246, *maurum*, p. 247, *argali*, p. 249, Mongolia, JAKOWLEFF, Hor. Ent. Ross. xxiv, n. spp.
- Noëmia apicicornis*, Sumatra, RITSEMA, Notes Leyd. Mus. xii, p. 136, n. sp.
- Nothophysis barnardi*, Queensland, OLLIFF, P. Linn. Soc. N.S.W. (2) v, n. sp.
- Nupserha kirki*, E. Africa, GAHAN, Tr. E. Soc. 1890, p. 326, n. sp.
- Nyphasia fuscipennis*, Bombay, GAHAN, Ann. N. H. (6) v, p. 53, n. sp.
- Oberea infantula*, Kanssu, GANGLBAUER, p. 83, Hor. Ent. Ross. xxiv, n. sp.
- Obriacum manzonii*, Yemen, GESTRO, Ann. Mus. Genov. (2) vii, p. 68, n. sp.
- Oeax*, note on ; GAHAN, Tr. E. Soc. 1890, p. 313.
- Pachydissus similis*, E. India, GAHAN, Ann. N. H. (6) v, p. 52 ; *P. boops*, p. 128, *tatei*, p. 129, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii : n. spp.
- Pachystola mimica*, Centr. Africa, BATES, P. Z. S. 1890, p. 490, n. sp.
- Pachyteria* and allies, supplement to the list of species of ; RITSEMA, Notes Leyd. Mus. xii, p. 175.
- P. calumniata*, E. India, p. 166, *diversipes*, p. 170, *similis*, p. 171, Cochin China, RITSEMA, Notes Leyd. Mus. xii ; *P. niassensis*, Nias I., GAHAN, t. c. p. 161 : n. spp.
- Paraclytus*, Bates, validity and components discussed ; GANGLBAUER, p. 71, Hor. Ent. Ross. xxiv ; *P.* (sub *Callidium*) *sexguttatum*, Ad., = (*caucasicus*, Motsch.) ; GANGLBAUER, p. 71, Hor. Ent. Ross. xxiv.
- ✓*Parastrangalis*, n. subg. of *Leptura*, for *L. (P.) potanini*, n. sp., Kanssu ; GANGLBAUER, p. 57, Hor. Ent. Ross. xxiv.
- Paristemia calabarica*, Africa, BATES, P. Z. S. 1890, p. 488, n. sp.
- Parame verrucifer*, Centr. Africa, BATES, P. Z. S. 1890, p. 485, n. sp.
- ✓*Pavieia*, n. g., near *Ægoidius*, p. clxxxiv, for *P. superba*, n. sp., Siam, p. clxxxv ; BROGNIART, Bull. Soc. Ent. Fr. 1890.
- ✓*Pemptolasius*, n. g. near *Ectatosia*, p. 64, for *P. humeralis*, n. sp., Darjeeling, pl. vii, fig. 8, p. 65, GAHAN, Ann. N. H. (6) v.
- Phædinus schaufussi*, Colombia, NONFRIED, S. E. Z. li, p. 20, n. sp.

Pharsalia proxima, Ceylon, GAHAN, Ann. N. H. (6) v, p. 55, n. sp.

Phemone cordiger, Sumatra, RITSEMA, p. 137, Notes Leyd. Mus. xii, n. sp.

Philagathes cinctus, Thibet, LAMEERE, p. ccxiii, C.R. Ent. Belg. 1890, n. sp.

Philematium nitidipenne, Nyassa, GAHAN, Tr. E. Soc. 1890, p. 307, n. sp.

Phryneta verrucosa, Dr., = (*melanoptera*, Th.); GAHAN, p. 33, Ann. N. H. (6) vi.

Phymasterna maculifrons, Madagascar, *obscura*, Angola, GAHAN, Tr. E. Soc. 1890, p. 318, n. spp.

Phymatodes juglandis, California, LENG, Ent. Am. vi, p. 214, n. sp.

Phytacia griseipes, Algeria, PIC, Bull. Soc. Ent. Fr. 1890, p. xci; *P. basalis*, Natal, GAHAN, Tr. E. Soc. 1890, p. 327 : n. spp.

Pidonia picta, Kanssu, GANGLBAUER, p. 51, Hor. Ent. Ross. xxiv, n. sp.

Plagionotus; table of the characters of species of; REITTER, Wien. ent. Z. ix, p. 212.

Planodes luctuosus figured; WATERHOUSE, Aid, pl. clxxxviii, fig. 9.

Platyomopsis frenchi, W. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 132, n. sp.

✓ *Plectroscapus*, n. g. near *Tennoscelis*, p. 319, for *P. bimaculatus*, n. sp., Old Calabar, p. 320, pl. ix, fig. 5, GAHAN, Tr. E. Soc. 1890.

Plocæderus ferrugineus, L., = (*nitidus*, White); GAHAN, Ann. N. H. (6) v, p. 51. *P. fucatus*, Th., *spiniornis*, Fab., *conocius*, Paso., *obesus*, Gah., notes on; *id. op. cit.* (6) vi, pp. 258 & 259.

P. emini, Trop. Africa, WATERHOUSE, Ann. N. H. (6) vi, p. 107, pl. i, fig. 3; *P. obesus* (Dup.), E. India, GAHAN, *op. cit.* (6) v, p. 51; *P. lymphaticus*, E. India, LAMEERE, p. ccx, C.R. Ent. Belg. 1890; *P. basalis*, p. 255, *gabonicus*, p. 256, *melancholicus*, W. Africa, *purpuripennis*, Natal, p. 257, GAHAN, Ann. N. H. (6) vi; n. spp.

Pogonocherus scutellaris and *ovalis*, synonymy discussed; GUILLEBEAU, Bull. Soc. Ent. Fr. (6) x, p. liv.

Polyarthron tschitscherini, Turkestan, SEMENOW, p. 225, Hor. Ent. Ross. xxiv, n. sp.

Polyzonus democraticus, E. India, LAMEERE, p. ccxi, C.R. Ent. Belg. 1890, n. sp.

Prinobius aneipennis, ♀ described; GAHAN, Ann. N. H. (6) v, p. 50.

Prosopocera antennata, W. Africa, p. 313, *aspersa*, Cape of Good Hope, p. 314, *cornifrons*, Senegal, *dejeani*, Natal, p. 315, GAHAN, Tr. E. Soc. 1890, n. spp.

Prosternodes scutellatus, p. 25, *dominicensis* (Chev.), p. 26, St. Domingo, GAHAN, Ann. N. H. (6) vi, n. spp.

Psathyrus longipennis, Madagascar, GAHAN, Tr. E. Soc. 1890, p. 321, n. sp.

Purpuricenus wachanrui, vars. described; HEYDEN, Deutsche e. Z. 1890, p. 79. *P. axillaris* and *humeralis*, distinctions of; HAMILTON, Canad. Ent. xxii, p. 238.

Rhagium sycophanta, var. *latefasciatum* ; MÜLLER, Z. Ent. Bresl. (n.s.), xv, p. 21.

Rhaphipodus subopacus, Nilghiri Hills, p. 48, *taprobanicus*, Ceylon, p. 49, GAHAN, Ann. N. H. (6) v, n. spp.

Rhaphuma præusta, E. India, LAMEERE, p. ccxii, C.R. Ent. Belg. 1890, n. sp.

Rhodops piperata, Nilghiri Hills, p. 59, *alboplagiata*, pl. vii, fig. 5, *albo-maculata*, N. India, p. 60, GAHAN, Ann. N. H. (6) v, n. spp.

Rhytiphora rosei, N. S. Wales, OLLIFF, P. Linn. Soc. N.S.W. (2) v, p. 10, n. sp.

Rosalia lameerei, Laos, BROGNIART, Bull. Soc. Ent. Fr. 1890, p. cxxi, figured Le Nat. xii, p. 163, n. sp.

Sakuntala, n. g., *Disteniarum*, p. ccxiii, for *S. kalidasæ*, n. sp., E. India, p. ccxiv ; LAMEERE, C.R. Ent. Belg. 1890.

Solenoptera : synonymical notes on *S. bilineata*, Fab., *subcanaliculata*. White, *canaliculata*, Fab., *asteria*, Buq. ; GAHAN, p. 26, Ann. N. H. (6) vi, *S. intermedia*, Colombia, GAHAN, Ann. N. H. (6) vi, p. 27, n. sp.

Sobarus poggei, ♀ described ; BATES, P. Z. S. 1890, p. 484.

Soridus, n. g., for *Xylorrhiza biapicata*, Chev. ; GAHAN, Tr. E. Soc. 1890, p. 324.

Spherion paucispinum, p. clxx, *diabolicum*, p. clxxi, *detritum*, p. clxxii, Brazil, LAMEERE, C.R. Ent. Belg. 1890, n. spp.

Stathmodera, n. g., *Pterocoptinae*, for *S. lineata*, p. 324, pl. ix, fig. 8, *aureicornis*, p. 325, Sierra Leone, n. spp. ; GAHAN, Tr. E. Soc. 1890.

Stenodontes chevrolati, Cuba, GAHAN, Ann. N. H. (6) vi, p. 23, n. sp.

Stenosoma apicalis, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 464, n. sp.

Stenias albicollis, pl. vii, fig. 6, p. 61, India, *maculiceps*, Ceylon, p. 62, GAHAN, Ann. N. H. (6) v, n. spp.

Stibara suturalis, E. India, GAHAN, p. 65, Ann. N. H. (6) v, n. sp.

Stixis, n. g., near *Velleda*, p. 310, for *S. punctata*, n. sp., E. Africa, p. 311 ; GAHAN, Tr. E. Soc. 1890.

Stizocera armata, Serv., synonymical note ; LAMEERE, p. clxx, C.R. Ent. Belg. 1890.

Symphyletes modestus, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 131, n. sp.

Taurotagus gristus, Guér., note on ; GAHAN, Ann. N. H. (6) vi, p. 248.

T. subauratus, Abyssinia, GAHAN, Ann. N. H. (6) vi, p. 247 ; *T. brevipennis*, Sierra Leone, GAHAN, Tr. E. Soc. 1890, p. 301 : n. spp.

Tereticus antennalis, Madagascar, GAHAN, Ann. N. H. (6) vi, p. 459, n. sp.

Thermonotus pasteuri, Nias I., RITSEMA, Notes Leyd. Mus. xii, p. 248, n. sp.

Thylactus insignis, W. Africa, GAHAN, p. 320, pl. ix, fig. 6, Tr. E. Soc. 1890, n. sp.

T. simulans, dorsalis, pl. vii, fig. 4, N. India, GAHAN, p. 58, Ann. N. H. (6) v, n. spp.

Tithoes arabicus, male described ; FAIRMAIRE, p. 550, Ann. Soc. Ent. Fr. (6) x.

Toxotus: table of characters of the Palearctic species; REITTER, Wien. ent. Z. ix, p. 249.

Tragocephala lemarineli, Congo, DUVIVIER, p. cxcvi, C.R. Ent. Belg. 1890, and Ann. Ent. Belg. xxxiv, p. 32, n. sp.

Tragosoma spiculum, New Mexico, *pilosicornis*, California, CASEY, p. 492, Ann. N. York Ac. v, n. spp.

Tritocosma atricilla, Newm., = (*digglesi*, Pasc.), BLACKBURN, p. 1273, P. Linn. Soc. N.S.W. (2) iv. *T. digglesii* figured; WATERHOUSE, Aid, pl. clxxxviii, fig. 6.

Vesperus strepens, larva described; MAYET, Bull. Soc. Ent. Fr. 1890, p. clxxxix.

Volumnia leucomelæna, Centr. Africa, BATES, P. Z. S. 1890, p. 492, n. sp.

Xoanodera regularis, N. India, GAHAN, Ann. N. H. (6) v, p. 52, n. sp.

Xylotrechus hamptoni, Nilghiri Hills, GAHAN, Ann. N. H. (6) v, p. 54, pl. vii, fig. 1, n. sp.

Xystrocera chalybeata, Nyassa, GAHAN, Tr. E. Soc. 1890, p. 299, n. sp.

Zatrephus spinosus, Singapore, p. clxxxiii, *nebulosus*, Saïgon, p. clxxxiv, BROGNIART, Bull. Soc. Ent. Fr. 1890, n. spp.

Zonopterus flavitarsis, varietal note; RITSEMA, Notes Leyd. Mus. xii, p. 174.

CHRYSOMELIDÆ.

[*Cf.* ALLARD (5, 6), BALLION (26), BALY (27, 28), BLACKBURN (60, 61, 62, 66), BRENSKE (88), DUVIVIER (197, 198, 199, 200), FAIRMAIRE (238, 239), GRABER (321), HEYDEN (360), JACOBY (317, 394, 395, 396, 397, 398), LEFÈVRE (479, 480), REITTER (644, 648, 657), SCHNEIDER (746), SCUDDER (754), STIERLIN (834), WEISE (900, 902, 903, 905).]

Notes on the habits of many N. American species; BEUTENMÜLLER, Ent. Am. vi, pp. 175-178.

Abirus globicollis, Banka I., LEFÈVRE, Notes Leyd. Mus. xii, p. 183, n. sp.

Acrocrypta variabilis, Philippines, DUVIVIER, C.R. Ent. Belg. 1890, p. cxliv, n. sp.

Acrothinium violaceum, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 180, n. sp.

Adorium japonicum, n. var. *cæruleum*; SCHÖNFELDT, Ent. Nachr. xvi, p. 173.

Adoxinia, n. g., between *Adoxus* and *Pseudocolaspis*, for *A. spinipes*, n. sp., Turcomania; REITTER, p. 128, Verh. Ver. Brünn, xxvii.

Ædionychis assinica, W. Africa, ALLARD, p. 557, Ann. Soc. Ent. Fr. (6) x, n. sp.

Aenidea apicalis, Nias I., JACOBY, Ann. Mus. Genov. (2) vii, p. 286, pl. iv, fig. 12, n. sp.

Æthonea murrayi, Baly, = (*variabilis*, Jac.); BALY, Ent. M. M. (2) i, p. 14.

Agbalus puncticollis, p. 205, *hogeï*, Mexico, *tenebrosus*, Panama, p. 206, JACOBY, Biol. Centr. Am. Col. vi (1), Supp. n. spp.

Alethasius semiviridis, p. 225, *pubicollis*, p. 226, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Allochroma fruhstorferi, St. Catharina, JACOBY, Ent. M. M. (2) i, p. 45, n. sp.

Amplipalpa lata, S. America, DUVIVIER, p. xxxix, C.R. Ent. Belg. 1890, n. sp.

✓ *Anidania*, n. g., near *Adoxius*, p. 127, for *A. rubripes*, n. sp., Askhabad, p. 128; REITTER, Verh. Ver. Brünn, xxvii.

Anidania (sub *Pseudocolaspis*) *luctuosa*, Solsky, = (*rubripes*, Reitt.); REITTER, Wien. ent. Z. ix, p. 14.

Antipha puncticollis, p. 221, *concolor*, p. 222, *birmanica*, p. 223, Burma, JACOBY, Ann. Mus. Genov. (2) vii; *A. nigrofasciata*, pl. ii, fig. 6, *bipartita*, fig. 5, p. 196, *A. ? elongata*, p. 197, China, JACOBY, Ent. xxiii; *A. varipennis*, pl. ii, fig. 7, *flaviventris*, China, JACOBY, p. 214, Ent. xxiii: n. spp.

Aoria chinensis, China, JACOBY, Ent. xxiii, p. 114, n. sp.

✓ *Aphilenia*, n. g., near *Tomyris*, p. 129, for *A. interrupta*, *ornata*, n. spp., Turkestan, p. 130; WEISE, Verh. Ver. Brünn, xxvii.

Aphthona attica, Greece, WEISE, Wien. ent. Z. ix, p. 113; *A. varipes*, China, JACOBY, Ent. xxiii, p. 161; *A. ferruginea*, *conveza*, W. Africa, ALLARD, p. 557, Ann. Soc. Ent. Fr. (6) x: n. spp.

✓ *Aphthonella*, n. g., near *Aphthonoides*, p. 204, for *A. bhamoensis*, n. sp., Burma, p. 205; JACOBY, Ann. Mus. Genov. (2) vii.

Argopus lævipennis, Jac., figured; Ann. Mus. Genov. (2) vii, pl. iv, fig. 6.

A. indicus, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 194, n. sp.

Asbecesta violacea, Cuba, ALLARD, p. lxxxvii, C.R. Ent. Belg. 1890, n. sp.

✓ *Ateratocerus*, n. g., near *Calomela*, for *A. intricatus*, n. sp., N. S. Wales; BLACKBURN, p. 357, P. Linn. Soc. N.S.W. (2) v.

Aulacophora analis, Web., var. = (*australis*, Blkn.); BLACKBURN, p. 1273, P. Linn. Soc. N.S.W. (2) iv. *A. olivieri*, Baly, = (*australis*, Blk.); BLACKBURN, p. 359, P. Linn. Soc. N.S.W. (2) v.

A. richmondensis, N. S. Wales, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 360; *A. bivittata*, New Ireland, ALLARD, p. lxxxix, C.R. Ent. Belg. 1890: n. spp.

Aulexis tibialis, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 167, n. sp.

Bonesia balyi, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 206, n. sp.

✓ *Brachyphora*, n. g., *Galerucinae*, near *Zermyla*, for *B. nigrovittata*, n. sp., China, pl. ii, fig. 12; JACOBY, Ent. xxiii, p. 195.

Callipepla viridipennis, Moreton Bay, ALLARD, p. lxxxv, C.R. Ent. Belg. 1890, n. sp.

Calomela eyrei, S. Australia, p. 155, *flavescens*, N. S. Wales, p. 358, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, n. spp.

Candezea (sub *Monolepta*) *irregularis*, Rits., = (*inconstans*, Duv.); DUVIVIER, p. xxxvii, C.R. Ent. Belg. 1890.

C. fea, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 233 ; *C. sculpta*, Queensland, BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 365 : n. spp.

Cassida undecimpunctata, n. var. *undecimguttata* ; REITTER, Wien. ent. Z. ix, p. 265.

C. elevata, Ordubad, REITTER, Deutsche e. Z. 1890, p. 175 ; *C. suberosa*, Transcaspian region, WEISE, p. 132, Verh. Ver. Brünn, xxvii ; *C. conicollis*, Mongolia, WEISE, p. 487, Hor. Ent. Ross. xxiv ; *C. (Chelysida) nitidula*, Turkestan, WEISE, Deutsche e. Z. 1890, p. 367 : n. spp.

Cephaloleia ornata, p. xxxvii, *balyi*, p. xxxviii, S. America, DUVIVIER, C.R. Ent. Belg. 1890, n. spp.

Cerotrus, = (*Anicera*) ; JACOBY, Ann. Mus. Genov. (2) vii, p. 237.

C. apicalis, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 236, n. sp.

Chatoenema longula, Caucasus, WEISE, Wien. ent. Z. ix, p. 111 ; *C. subcostata*, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 203 ; *C. gestroi*, Nias I., *id. t. c.* p. 283 : n. spp.

Chalcoides : forcipes of numerous species figured ; WEISE, Deutsche e. Z. 1890, p. 287, pl. ii, figs. 23-29. *C. aurata*, var., = (*nigricoxis*, All.) ; WEISE, Wien. ent. Z. ix, p. 111. *C. picipes*, Weise, note on ; JACOBY, Ent. xxiii, p. 162.

Chalcolumpra rustica, W. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, n. sp.

↓ *Chalcolema*, n. g. (*Crioceridae*, ?), p. 84, for *C. foveicollis*, n. sp., China, p. 85, pl. i, fig. 1 ; JACOBY, Ent. xxiii.

Chalcomela sloanei, N. S. Wales, BLACKBURN, p. 356, P. Linn. Soc. N.S.W. (2) v, n. sp.

Chalcoephana emarginata, Guatemala, *nigritarsis*, Panama, p. 229, *quadricostata*, Guatemala, *brevicollis*, p. 230, *dimidiaticornis*, p. 231, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Chalcoplacis fulvitaris, Panama, p. 188, *mexicanus*, Acapulco, p. 189, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Charidea, Baly, = (*Allophyla*, Weise), and *C. fortunei*, = (*A. aurora*) ; JACOBY, Ent. xxiii, p. 216.

Charistena bangalana, Congo, DUVIVIER, p. excvii, C.R. Ent. Belg. 1890, and Ann. Ent. Belg. xxxiv, p. 42 ; *C. bergi*, Buenos Ayres, *id.* p. xl, C.R. Ent. Belg. 1890 : n. spp.

Chloropterus lefevrei, Ordubad, REITTER, Wien. ent. Z. ix, p. 198, n. sp.

Choris pubicollis, Mexico, JACOBY, p. 216, pl. xl, fig. 20, Biol. Centr. Am. Col. vi (1) Supp., n. sp.

Chrysochures asiatica, n. var. *virens* ; WEISE, Deutsche e. Z. 1890, p. 366.

Chrysodina cyanipennis, Mexico, p. 184, *fulvicornis*, p. 185, *nana*, Mexico, *pusilla*, Panama, p. 186, *vicina*, Mexico, *atroviolacea*, Panama, p. 187, *C. (?) granulata*, Mexico, p. 188, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Chrysolampira curvipes, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 161, n. sp.

Chrysomela, food-plants of species of, in France ; PUTON, Rev. d'Ent. ix, pp. 113 & 349. *C. lichenis*, n. var. *hopffgarteni* ; WEISE, Deutsche e. Z. 1890, p. 30.

C. reuleauxi, Naples, BRENSKE, Ent. Nachr. xvi, p. 14 ; *C. fuscipes*, Chingan, *saccarum*, Turkestan, WEISE, p. 479, Hor. Ent. Ross. xxiv ; *C. turanica*, Turcomania, REITTER, p. 131, Verh. Ver. Brünn, xxvii ; *C. bella*, China, JACOBY, Ent. xxiii, p. 253 : n. spp.

Chithoneis suturalis, Duv., = (*suturalis*, All.), *bivittata*, Baly, = (*univittata*, All.) ; Baly, Ent. M. M. (2) i, p. 14.

Cleorina fulvipes, Celebes, LEFÈVRE, Notes Leyd. Mus. xii, p. 186 ; *C. lefevrei*, China, JACOBY, Ent. xxiii, p. 116 : n. spp.

Clytra atraphaxidis, n. var. *punctata* ; WEISE, p. 477, Hor. Ent. Ross. xxiv.

Cælenomenodera femorata, *tristricula*, *coccinea*, Madagascar, FAIRMAIRE, Bull. Soc. Ent. Fr. 1890, p. cciii, n. spp.

Colaspis impressa var., = (*laticollis*, Jac.), *compta*, Lef., = (*godmani*, Jac.) ; JACOBY, p. 222, Biol. Centr. Am. Col. vi (1) Supp.

C. sculpta, Panama, p. 223, *subænea*, Guatemala, *inconspicua*, Panama and S. America, *yucatana*, Temax, p. 224, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Colaspoides igneicollis, *fea*, p. 185, *levicollis*, p. 186, *pallidula*, p. 187, Tenasserim and Burma, JACOBY, Ann. Mus. Genov. (2) vii ; *C. venusta*, *ciliatipes*, Sumatra, LEFÈVRE, Notes Leyd. Mus. xii, p. 188 ; *C. lefevrei*, Nias Is., JACOBY, Ann. Mus. Genov. (2) vii, p. 280 : n. spp.

Colasposoma transversicolle, p. 176, *multipunctatum*, p. 177, *capitatum*, p. 178, Burma, JACOBY, Ann. Mus. Genov. (2) vii, n. spp.

Coptocephala gebleri, n. var. *ruficeps* ; WEISE, Deutsche e. Z. 1890, p. 363.

Corynodes schwaneri, Borneo, LEFÈVRE, Notes Leyd. Mus. xii, p. 187 ; *C. bengalensis*, E. India, DUVIVIER, p. cxliii, C.R. Ent. Belg. 1890 ; *C. ? fulvicollis*, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 183 : n. spp.

Cneorane elegans var. = (*violaceipennis* var.), *fulvicollis* = (*crassicornis*, Fairm.) ; Baly, Ent. M. M. (2) i, p. 14. *C. femoralis*, Jac., = (*de la touchi*, Fairm.) ; JACOBY, Ent. xxiii, p. 193.

C. fulvicornis, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 209 ; *C. apicicornis*, p. 166, *abdominalis*, p. 167, China, JACOBY, Ent. xxiii : n. spp.

Coytiera costata, Mexico, JACOBY, p. 215, Biol. Centr. Am. Col. vi (1) Supp., n. sp.

Crepidodera : forcipes of *transversa*, *impressa*, *ferruginea* figured ; WEISE, Deutsche e. Z. 1890, p. 287, pl. ii, figs. 18-20. *C. obscuritarsis*, Motsch., note on ; JACOBY, Ent. xxiii, p. 162.

C. norica, Laibach, WEISE, Deutsche e. Z. 1890, p. 24 ; *C. levicollis*, *bivittata*, p. 555, *viridimicans*, p. 556, W. Africa, ALLARD, Ann. Soc. Ent. Fr. (6) x : n. spp.

Crioceris seminigra, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 153, n. sp.

Cryptcephalus ulustus, Turkestan, WEISE, Deutsche e. Z. 1890, p. 364 ;

C. monilis, Mongolia, WEISE, p. 478, Hor. Ent. Ross. xxiv ; *C. rectipennis*, *nigrolimbatus*, pl. i, fig. 6, p. 87, *festivus*, fig. 4, *flavopictus*, fig. 5, p. 88, *discoidalis*, p. 89, China, JACOBY, Ent. xxiii ; *C. birmanicus*, p. 159, *unifasciatus*, p. 161, Burma, JACOBY, Ann. Mus. Genov. (2) vii ; *C. herremansi*, Zanzibar, DUVIVIER, C.R. Ent. Belg. 1890, p. cxlii : n. spp.

Cynorta melanocephala, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 220, n. sp.

Demotina balyi, Tenasserim, JACOBY, p. 168, Ann. Mus. Genov. (2) vii, n. sp.

Derocrepis rufipes, *sodalis*, *forcipes* figured ; WEISE, Deutsche e. Z. 1890, p. 287, pl. ii, figs. 16 & 17.

Diabrotica : a number of new names proposed for species incorrectly named by Baly ; GAHAN, P. E. Soc. 1890, p. xliii. *D. 12-punctata*, larva described ; WEBSTER, Ins. Life, iii, p. 150.

D. testaceicollis, p. 9, *mediofasciata*, *bisecta*, p. 14, Amazons, *decaspila*, p. 16, *adornata*, p. 17, Cayenne, *ianthe*, Ecuador, p. 18, *octopustulata* = (*latevittata*, Baly, olim), Amazons, *rugulipennis*, Colombia, p. 19, *fowleri*, *bilineata*, Brazil, p. 20, *piceo-picta*, Upper Amazons, p. 25, *confluenta*, Ecuador, p. 26, *pauperata*, Bahia, p. 27, *germari*, Colombia, p. 29, *reedii*, Bahia, p. 33, *transversa*, St. Catharine, p. 34, *kraatzii*, p. 35, *gothami*, p. 37, Ecuador, *luteopustulata*, p. 43, *curvipustulata*, p. 44, Colombia, *apicipennis*, *atrosignata*, p. 46, *sedata*, p. 48, Brazil, *simulata*, p. 50, *proximans*, Amazons, *brevicornis*, Cayenne, p. 51, *analis*, p. 52, *weisei*, p. 53, Brazil, *facialis*, Colombia, *soroensis*, p. 54, *brevivittata*, Cayenne, *cavicolis*, p. 55, *kirbyi*, p. 57, Brazil, *trifoveolata*, Amazons, p. 58, *piceo-signata*, p. 61, *meyeri*, Brazil, *diversicornis*, Upper Amazons, p. 63, *rugulosa*, Brazil, p. 64, *nigroscutata* = (*scutellata*, B., olim), Brazil, p. 65, *reitteri*, Colombia, p. 66, *submarginata*, p. 67, *emorsitans*, p. 68, Brazil, *nigrostriata*, p. 69, *prasino-marginata*, p. 71, Colombia, *oculata*, *picomarginata*, Brazil, p. 72, *piceolimbata*, Upper Amazons, p. 73, *schaufussi*, Bolivia, p. 74, *flavofulva*, Cayenne, p. 75, *fulvescens*, Peru, *atriceps*, Bogota, p. 76, *lutescens*, Brazil, p. 77, *assignata*, p. 78, *tibialis*, Cayenne, *fulveola*, Amazons, p. 79, *pallescens*, p. 80, *bartleti*, Upper Amazons, *fauveli*, Brazil, p. 81, *atriscutata*, Amazons, p. 82, *crenulata*, Ecuador, p. 83, *chloris*, Upper Amazons, p. 84, *diversicolor*, Ecuador, p. 86, BALY, Tr. E. Soc. 1890, n. spp.

Diorhabda rybakowi, Mongolia, WEISE, p. 484, Hor. Ent. Ross. xxiv ; *D. brevicornis*, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 214 : n. spp.

Dioryctus nigripennis, China, JACOBY, Ent. xxiii, p. 89 ; *D. variabilis*, China, JACOBY, Ent. xxiii, p. 114 : n. spp.

Disonycha collaris, Fab., habits and metamorphoses ; MURTFELDT, p. 76, Bull. Dep. Agr. Ent. xxii.

Donacia aquatica, L., metamorphoses ; XAMBEU, p. 283, Rev. d'Ent. ix.

D. longicornis, China, JACOBY, Ent. xxiii, p. 84, pl. i, fig. 2, n. sp.

Dorydeu (?) *indica*, p. 231, *basalis*, p. 232, Burma, JACOBY, Ann. Mus. Genov. (2) vii, n. spp.

Doryida, Baly, characters emended ; BALY, Ent. M. M. (2) i, p. 12.

D. nigripennis, *tarsalis*, Siam, BALY, Ent. M. M. (2) i, p. 12 ; *D. flava*,

Nepal, *ferruginea*, Philippines, ALLARD, p. xciii, C.R. Ent. Belg. 1890 : n. spp.

Emathea violaceipennis, Burma, BALY, Ent. M. M. (2) i, p. 12, n. sp.

Enneamera apicalis, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 200, n. sp.

Entomoscelis adonidis, larva described ; LESNE, p. 177, Ann. Soc. Ent. Fr. (6) x.

Ephyræa exigua, *isthmica*, pl. xl, fig. 19, Panama, JACOBY, p. 214, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Epitrix pubescens, *atropæ*, forcipes figured ; WEISE, Deutsche e. Z. 1890, p. 287, pl. ii, figs. 21 & 22. *E. pubescens*, variation noticed ; WEISE, Wien. ent. Z. ix, p. 111.

Eryxia grandis, *gracilipes*, Aden, LEFÈVRE, Bull. Soc. Ent. Fr. (6) x, p. lvii, n. spp.

Eucycla varipes, Jac., referred to *Sphæroderma*, JACOBY, p. 193, Ann. Mus. Genov. (2) vii.

Euphyrtus pallipes, *intermedius*, p. 207, *varipennis*, p. 208, *fulvicornis*, *umbrosus*, *varicornis*, *pallidus*, pl. xl, fig. 13, p. 209, *nigritarsis*, *elongatus*, fig. 14, *humeralis*, fig. 15, p. 210, *apicicornis*, fig. 16, *E. (?) semirugosus*, p. 211, *rugosus*, fig. 17, p. 212, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Eustetha nigropunctata, Fairm., note on, with figure ; JACOBY, Ent. xxiii, p. 193, pl. ii, fig. 4.

Fidia tibialis, Mexico, JACOBY, p. 232, Biol. Centr. Am. Col. vi (1) Supp., n. sp.

Galeruca (Adimonia) griseo-villosa, p. 165, *G. chinensis*, p. 166, China, JACOBY, Ent. xxiii, n. spp.

Galerucella, forcipes of numerous species figured ; WEISE, Deutsche e. Z. 1890, p. 287, pl. ii, figs. 8-15.

G. sericella, Obock, FAIRMAIRE, p. 553, Ann. Soc. Ent. Fr. (6) x ; *G. melancholica*, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 213 ; *G. marginicollis*, N. Guinea, ALLARD, p. xci, C.R. Ent. Belg. 1890 : n. spp.

Galerucida nigrimembris, Fairm., referred to *Galerucella* ; JACOBY, Ent. xxiii, p. 217.

Gastroidea analis, Bosnia, REITTER, Deutsche e. Z. 1890, p. 396, n. sp.

Gynandrophthalma lævicollis, *fulveola*, China, JACOBY, Ent. xxiii, p. 86 ; *G. divisa*, p. 156, *sexmaculata*, p. 157, Burma, JACOBY, Ann. Mus. Genov. (2) vii : n. spp.

Haltica ignita, Ill., varietal note ; HAMILTON, Canad. Ent. xxii, p. 242.

H. (Graptodera) foveicollis, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 190, n. sp.

Haflatotrius fulvicollis, Amazons, JACOBY, Ent. M. M. (2) i, p. 67, n. sp.

Haplosomoides, n. g., near *Haplosoma*, for *Rhaphidopalpa serena*, Boh., and *Pseudocophora plicata*, All. ; DUVIVIER, p. xxxiv, C.R. Ent. Belg. 1890.

Haplosomyx sumatræ, Web., characters of sexes ; DUVIVIER, C.R. Ent. Belg. 1890, p. xxxvi.

H. sublaevicollis, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 219, n. sp.

Hespera sericea, Weise, characters, p. 162, figure, pl. i, fig. 11; JACOBY, Ent. xxiii.

Heteraspis hauseri, Turkestan, WEISE, Deutsche e. Z. 1890, p. 365; *H. quadrifasciata*, p. 171, *clypeata, variegata*, p. 172, Burma, JACOBY, Ann. Mus. Genov. (2) vii; *H. igneipennis*, Timor, LEFÈVRE, Notes Leyd. Mus. xii, p. 182: n. spp.

Homophyla surinamensis, Gansee, DUVIVIER, p. cxlvi, C.R. Ent. Belg. 1890, n. sp.

Hoplostines, n. g., *Sermylites*, for *H. viridipennis*, n. sp., N. S. Wales; BLACKBURN, P. Linn. Soc. N.S.W. (2) v, p. 361.

Hyphusis fee, p. 196, *limbatipennis, unicolor*, p. 197, *femoralis*, p. 198, Burma, JACOBY, Ann. Mus. Genov. (2) vii, n. spp.

Imolia nigrofasciata figured, Ann. Mus. Genov. (2) vii, pl. iv, fig. 7.

Ischrolampra panamensis, Tolé, JACOBY, p. 204, pl. xl, fig. 12, Biol. Centr. Am. Col. vi (1) Supp., n. sp.

Lamprosoma bugabense, Panama, p. 173, *imitans*, p. 174, *aureolimbatus*, Mexico, p. 175, *dubiosum*, Panama, *femoratum*, p. 176, *juvencum*, p. 177, Mexico, *ovulum*, Guatemala, *pusillum*, Panama, *intermedium*, Mexico, p. 178, *chiriquense, opacicolle*, p. 179, *angustatum*, Panama, *constrictum, unicolor*, Guatemala, p. 180, *aterrinum*, Nicaragua, *atro-violaceum*, Panama, p. 181, *verrepacis*, Guatemala, *punctifrons*, Panama, p. 182, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Lamprosphaerus submetallicus, Panama, *variabilis*, Guatemala, p. 191, *semipurpureus*, Panama, *plumbeus*, Mexico, p. 192, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Lema hoffmannseggi, metamorphoses; XAMBEU, p. 285, Rev. d'Ent. ix.

L. chinensis, China, JACOBY, Ent. xxiii, p. 85; *L. rugifrons*, p. 151, *semifulva*, p. 152, Burma, *modiglianii*, Nias I., p. 278, pl. iv, fig. 1, JACOBY, Ann. Mus. Genov. (2) vii: n. spp.

Leptarthra dohrni, Baly, = (*grandipennis*, Fairm.); JACOBY, Ent. xxiii, p. 194.

L. intermedia, China, JACOBY, Ent. xxiii, p. 194, n. sp.

Lina, embryology of; GRABER (321).

Liroëttes leechi, fulvipennis, pl. ii, fig. 2, China, JACOBY, Ent. xxiii, p. 215, n. spp.

Lochmaea birmanica, Bhamo, JACOBY, Ann. Mus. Genov. (2) vii, p. 215, n. sp.

Longitarsus linnæi, n. var. *scrutator*; WEISE, Wien. ent. Z. ix, p. 115.

L. pubescens, Swametia, p. 114, *truncatellus*, Athens, *emarginatus*, Syria, p. 115, *brachypterus*, Araxes Valley, p. 116, WEISE, Wien. ent. Z. ix, n. spp.

Luperocnemus, Fairm., characters of, referred to *Halticinae*; JACOBY, Ent. xxiii, p. 161.

Luperodes præustus, sexual distinctions; JACOBY, Ent. xxiii, p. 163.

L. bipartitus, China, JACOBY, Ent. xxiii, p. 163; *L. duodecim-maculata, piceicollis*, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 212: n. spp.

- Luperus capito*, Weise, var. described ; JACOBY, Ent. xxiii, p. 165.
- L. rhenanus*, Laufenburg, STIERLIN, MT. Schw. ent. Ges. viii, p. 251 ; *L. pratti*, p. 164, *biplagiatus*, p. 165, pl. ii, fig. 10, China, JACOBY, Ent. xxiii ; *L. marginalis*, Falkland Is., ALLARD, p. xci, C.R. Ent. Belg. 1890 : n. spp.
- Lypsthes ater*, Motsch., = (*Talmonus farinosus*, Fairm.) ; JACOBY, Ent. xxiii, p. 115.
- Malacosoma flavipes* and *luteicollis*, notes on ; BALLION, Soc. Ent. v, p. 25.
- Malaxia alluaudi*, W. Africa, ALLARD, p. 558, Ann. Soc. Ent. Fr. (6) x, n. sp.
- Malegia turkestanica*, Dhisak, REITTER, Wien. ent. Z. ix, p. 198, n. sp.
- Melasoma maculicollis*, China, JACOBY, Ent. xxiii, p. 117, n. sp.
- Melitonoma indica*, *affine*, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 158, n. spp.
- Menippus dimidiaticornis*, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 218 ; *M. elegans*, p. 362, *quadrinotatus*, p. 363, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v : n. spp.
- Mesodonta lurida*, Sierra Leone, ALLARD, p. xc, C.R. Ent. Belg. 1890, n. sp.
- Metaxyonycha hirsuta*, pl. xl, fig. 22, p. 217, *panamensis*, fig. 23, Panama, *variolora*, Mexico, p. 218, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.
- Metriotes metallicus*, Ecuador, JACOBY, Ent. M. M. (2) i, p. 68, n. sp.
- Mimastrites*, tabulation of the genera ; ALLARD, p. lxxxvi, C.R. Ent. Belg. 1890.
- Mimastra* = (*Brachita*, All.) ; ALLARD, p. lxxx, C.R. Ent. Belg. 1890. Characters of *Mimastra*, with tabulation of the species ; ALLARD, pp. lxxxii-lxxxiv, C.R. Ent. Belg. 1890.
- M. gracilicornis*, p. 210, *polita*, p. 211, Burma, JACOBY, Ann. Mus. Genov. (2) vii ; *M. platteeuwi*, Sumatra, DUVIVIER, C.R. Ent. Belg. 1890, p. xxxiii : n. spp.
- Monolepta maculosa*, E. India, ALLARD, p. xcii, C.R. Ent. Belg. 1890 ; *M. lecchi*, China, JACOBY, Ent. xxiii, p. 216 ; *M. clypeata*, p. 225, *multimaculata*, p. 226, *orientalis*, p. 227, *albofasciata modesta*, p. 228, *flavofasciata*, p. 229, Burma, JACOBY, Ann. Mus. Genov. (2) vii ; *M. rosea*, p. 364, *nigricornis*, p. 365, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) v : n. spp.
- Morphosphæsa (sic) impunctata*, island of Visaya, ALLARD, p. lxxxix, C.R. Ent. Belg. 1890, n. sp.
- ✓ *Nephus*, n. g., near *Nodostoma*, p. 165, for *N. femoratus*, n. sp., Burma, p. 166 ; JACOBY, Ann. Mus. Genov. (2) vii.
- Neorupilia stirlingi*, Adelaide, BLACKBURN, p. 1274, P. Linn. Soc. N.S.W. (2) iv, n. sp.
- ✓ *Niasia*, n. g. (*Galerucidæ*), for *N. difformis*, n. sp., Nias I., pl. iv, fig. 9, JACOBY, Ann. Mus. Genov. (2) vii.

Noda thoracica, Jac., referred to *Spintherophyta*, and is the same as *S. cyanea*, Lef. ; JACOB, p. 193, Biol. Centr. Am. Col. vi (1) Supp.

Noda imitans, *opacicollis*, Mexico, p. 194, *chontalensis*, Nicaragua, p. 195, *sinuata elongata*, p. 196, *fulvicornis*, *basalis*, p. 197, *placida*, *metallica*, p. 198, *plumbea*, Mexico, *parvula*, Panama, p. 199, *cyanella*, *acutangula*, p. 200, Mexico, *hondurensis*, Rio Sarstoon, *obliterata*, Mexico, p. 201, *ovata*, Panama, *bella*, p. 202, *congregata*, p. 203, Mexico, JACOB, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Nodostoma lenkorana, Caspian Sea, REITTER, Deutsche e. Z. 1890, p. 164 ; *N. orientale*, pl. i, fig. 7, *gibbosum*, China, JACOB, Ent. xxiii, p. 115 ; *N. biplagiatum*, p. 162, *nigrofasciatum*, p. 163, *subcostatum*, p. 164, Burma, JACOB, Ann. Mus. Genov. (2) vii : n. spp.

Nonarthra nigriceps, Weise, figure pl. ii, fig. 1, variation p. 163 ; JACOB, Ent. xxiii.

Ochralea divisa, Burma, JACOB, Ann. Mus. Genov. (2) vii, p. 230, n. sp.

Octogonotes apicicornis, Brazil, JACOB, Ent. M. M. (2) i, p. 46, n. sp.

Edionychis birmanica, Burma, JACOB, Ann. Mus. Genov. (2) vii, p. 199, n. sp.

Oides servittata, Duv., = (*quinclineata*, Jac.) ; DUVIVIER, p. xxxvi, C.R. Ent. Belg. 1890.

Oomorplus mexicanus, Mexico, *hirtipes*, Panama, JACOB, p. 183, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Orthæa, n. g. (group 16, Chp.), for *O. viridipennis*, n. sp., Tenasserim, p. 202, JACOB, Ann. Mus. Genov. (2) vii.

Pagria aneicollis, Java, LEFÈVRE, Notes Leyd. Mus. xii, p. 181, n. sp.

Paracadmus luctuosus, Chp., = (*lucifugus*, Baly) ; BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 135.

P. maculatus, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 135, n. sp.

Paropsides maculicollis, China, JACOB, Ent. xxiii, p. 118, n. sp.

Paropsis gibbosa, S. Australia, *insularis*, Kangaroo I., p. 139, *nitidissima*, p. 140, *meyricki* (*hemisphaerica*, Chp., var. ?), p. 141, *mimula*, Australia, *confusa*, Kangaroo I., p. 142, *ænea*, p. 143, *froggatti*, p. 145, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, n. spp.

Peribleptus metallicus, Bogota, p. 45, *ecuadoriensis*, Ecuador, p. 46, JACOB, Ent. M. M. (2) i, n. spp.

Phædon (*Sternoplatys*) *longulus*, Turkestan, WEISE, p. 480, Hor. Ent. Ross. xxiv, n. sp.

Phædra chapuisi, p. 189, *abdominalis*, Panama, *brevicornis*, Nicaragua, p. 190, JACOB, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

Phola, n. g., near *Prasocuris*, for *P. keyserlingi*, n. sp., Sze-tschuan ; WEISE, p. 482, Hor. Ent. Ross. xxiv.

Phyllobrotica, note on its composition ; ALLARD, p. lxxxix, C.R. Ent. Belg. 1890. *P. elegans*, Kr., = (*trimaculata*, Ball.) ; KRAATZ, Soc. Ent. v, p. 45, but BALLION demurs, t. c. p. 129.

P. trimaculata, Tiflis, BALLION, Soc. Ent. iii, p. 33, n. sp.

Phyllodecta : forcipes of numerous species figured ; WEISE, Deutsche e. Z. 1890, p. 287, pl. ii (iii) figs. 1-7.

Phyllodecta polaris, Arctic Norway, SCHNEIDER, Tromsø, Mus. Aarsh. xii, p. 73 ; *P. multipunctata*, China, JACOBY, Ent. xxiii, p. 118 : n. spp.

Phyllotreta : forcipes of numerous species figured ; WEISE, Deutsche e. Z. 1890, p. 287, pl. i, figs. 17-25.

P. denticornis, *fucata*, S. Russia, WEISE, Wien. ent. Z. ix, p. 112 ; *P. australis*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, p. 146 : n. spp.

Phytodecta 13-maculata, Jac., = (*Paropsides nigrosparsus*, Fairm.) ; JACOBY, Ent. xxiii, p. 118.

P. chrysomeloides, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 189 ; *P. flavo-plagiata*, China, JACOBY, Ent. xxiii, p. 117, pl. i, fig. 8 : n. spp.

Phytorus assimilis, p. 184, *pallidus*, p. 185, Borneo, LEFÈVRE, Notes Leyd. Mus. xii, n. spp.

Plagiodera marginipennis, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 188, n. sp.

Platyxantha gracilis, Burma, JACOBY, Ann. Mus. Genov. (2) vii, p. 234, n. sp.

Polyoptilus gracilis, *robustus*, S. Australia, BLACKBURN, p. 134, Tr. R. Soc. S. Austr. xiii, n. spp.

Prasyptera basalis, *fasciata*, Borneo, ALLARD, p. xci, C.R. Ent. Belg. 1890, n. spp.

Prionodera limbata, Mexico, JACOBY, p. 219, pl. xl, fig. 24, Biol. Centr. Am. Col. vi (1) Supp., n. sp.

Prionopleura erudita, p. 136, *suturalis*, p. 137, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. xiii, n. spp.

Promecosoma flohri, pl. xl, fig. 25, p. 219, *suturale*, p. 220, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1) Supp., n. spp.

√ *Pseudochoris*, n. g. (*Iphimeinæ*, near *Euphrytus*), for *P. fulvicollis*, n. sp., Mexico, pl. xl, fig. 18 ; JACOBY, p. 213, Biol. Centr. Am. Col. vi (1) Supp.

Pseudocolaspis sarvadensis, Solsky, referred to *Adoxinia*, Reitt. ; REITTER, p. 14, Wien. ent. Z. ix.

P. insignis, p. 182, *lansbergi*, p. 183, Somali-land, LEFÈVRE, Notes Leyd. Mus. xii, n. spp.

Pseudocophora flavescens, Baly, = (*flava*, Allard) ; Baly, Ent. M. M. (2) i, p. 14.

P. birmanica, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 208, n. sp.

Pseudodera bifasciata, Tenasserim, JACOBY, Ann. Mus. Genov. (2) vii, p. 200, n. sp.

Psylliodes (Semincema) parallela, Turkestan, WEISE, Deutsche e. Z. 1890, p. 366, n. sp.

Pyropida sumptuosa, Baly, var. figured ; Ann. Mus. Genov. (2) vii, pl. iv, fig. 3.

Rhabdoptera picipes, *prætextata*, notes on; HAMILTON, *Canad. Ent.* xxii, p. 241.

Rhabdopterus fulvus, Panama, JACOBY, p. 227, *Biol. Centr. Am. Col.* vi (1) Supp., n. sp.

Rhembastus flavidus, W. Africa, LEFÈVRE, *Notes Leyd. Mus.* xii, p. 186, n. sp.

Rhinotmetus nigrolimbatus, Brazil, JACOBY, *Ent. M. M.* (2) i, p. 67, n. sp.

Rhyparida bimaculata, Burma, JACOBY, *Ann. Mus. Genov.* (2) vii, p. 174;

R. armata, Sumatra, JACOBY, *Ann. Mus. Genov.* (2) vii, p. 281 : n. spp.

Sagra brevipes, Tenasserim, p. 148, *multipunctata*, Burma, p. 149, JACOBY, *Ann. Mus. Genov.* (2) vii, n. spp.

Sastroides birmanica, Bhamo, JACOBY, *Ann. Mus. Genov.* (2) vii, p. 217, n. sp.

Sebaethe cinctipennis, Liu Kiu Is., WEISE, *Ent. Nachr.* xvi, p. 174; *S. africana*, Assinia, ALLARD, p. 557, *Ann. Soc. Ent. Fr.* (6) x : n. spp.

Sepharia frontalis, Kashmir, JACOBY, *Ent.* xxiii, p. 254, n. sp.

Solenia (Euphyma) indica, Tenasserim, JACOBY, *Ann. Mus. Genov.* (2) vii, p. 235, n. sp.

Sphæroderma piceicollis, Burma, p. 191, *biplagiata*, Tenasserim, p. 192, JACOBY, *Ann. Mus. Genov.* (2) vii, n. spp.

Sphærophysa (?) piceicollis, Burma, JACOBY, p. 195, *Ann. Mus. Genov.* (2) vii, n. sp.

Sphenoraia cyanea, India, ALLARD, p. xcii, *C.R. Ent. Belg.* 1890; *S. duodecimmaculata*, Burma, JACOBY, p. 219, *Ann. Mus. Genov.* (2) vii; *S. cupreata*, China, JACOBY, *Ent.* xxiii, p. 193 : n. spp.

Spintherophyta violacea, Mexico, JACOBY, p. 204, *Biol. Centr. Am. Col.* vi (1) Supp., n. sp.

† *Stethidea*, n. g. (*Galerucinae*), type *Doryda balyi*, Duv.; BALY, *Ent. M. M.* (2) i, p. 13.

Stethotes fulvilabris, N. Guinea, *longimana*, Waigiou, LEFÈVRE, *Notes Leyd. Mus.* xii, p. 186, n. spp.

Strobiderus æquatorialis, Sierra Leone, ALLARD, p. xcii, *C.R. Ent. Belg.* 1890, n. sp.

† *Taphinella*, n. g. (*Galerucinae*), for *T. nigripennis*, n. sp., Burma; JACOBY, p. 224, *Ann. Mus. Genov.* (2) vii.

T. longicornis, China, JACOBY, *Ent.* xxiii, p. 194, n. sp.

Temnaspis humeralis, China, JACOBY, *Ent.* xxiii, p. 86, pl. i, fig. 3; *T. nigripennis*, Burma, JACOBY, *Ann. Mus. Genov.* (2) vii, p. 155 : n. spp.

† *Therses*, n. g. (*Iphimeinae*, near *Euphrytus*), for *T. nigricollis*, p. 212, *ochripes*, p. 213, n. spp., Mexico; JACOBY, *Biol. Centr. Am. Col.* vi (1) Supp.

† *Thootes*, n. g. (near *Xanthonia*), p. 231, for *T. glabratus*, n. sp., Mexico, p. 23; JACOBY, *Biol. Centr. Am. Col.* vi (1) Supp.

Thrasygoeus maculicollis, Brazil, JACOBY, *Ent. M. M.* (2) i, p. 68, n. sp.

Thyamis (Longitarsus) nigripes, *nervosa*, W. Africa, ALLARD, p. 556, *Ann. Soc. Ent. Fr.* (6) x, n. spp.

Timarcha interstitialis, metamorphoses; XAMBEU, *Le Nat.* xii, p. 193.

Trichidea, n. g., *Galerucina*, near *Strobiderus* and *Syoplia*, p. 13, for *T. bowringii*, Hong Kong, p. 13, *mouhoti*, Siam, p. 14, n. spp.; BALY, Ent. M. M. (2) 1.

Trirhabda tomentosa, larva described; BEUTENMÜLLER, Canad. Ent. xxii, p. 36.

Tymnes metasternalis, *chrysis*, notes on; HAMILTON, Canad. Ent. xxii, pp. 239 & 240.

Xenomela fausti, Tschaar-tasch, WEISE, Deutsche e. Z. 1890, p. 23, n. sp.

Xiphispa centrolineata, *lugubris*, Madagascar, FAIRMAIRE, p. cciii, Bull. Soc. Ent. Fr. 1890, n. sp.

Zeteticus bifasciatus, Peru, JACOBY, Ent. M. M. (2) 1, p. 47, n. sp.

LANGURIIDÆ, EROTYLIDÆ.

[Cf. FOWLER (277), GORHAM (319), REITTER (648).]

Coptengis sheppardi and *pascoi*, colour variation in; GORHAM, Notes Leyd. Mus. xii, p. 130.

Episcapha xanthopustulata, Sumatra, GORHAM, Notes Leyd. Mus. xii, p. 47, n. sp.

Languria mozardi, life-history; WEED, Bull. Ohio Exp. Station (2) iii, p. 235. *L. mozardi* and *gracilis*, habits of larvæ; CHITTENDEN, Ins. Life, ii, p. 346.

L. ochripennis, Malacca, FOWLER, Ent. M. M. (2) i, p. 107, n. sp.

Megaloducne fasciata, larva described; BEUTENMÜLLER, p. 317, Psyche, v.

Orestia arcuata, forceps figured; WEISE, Deutsche e. Z. 1890, p. 287, pl. ii, fig. 30.

Triplax carpathica, Carpathians, REITTER, Deutsche e. Z. 1890, p. 388, n. sp.

ENDOMYCHIDÆ.

[Cf. BLACKBURN (62), GORHAM (317), REITTER (648).]

Alexia algerica, Philippeville, REITTER, Deutsche e. Z. 1890, p. 167, n. sp.

Ephebus piceus, Guatemala, pl. viii, fig. 1, p. 131, *chontalesianus*, Nicaragua, fig. 2, p. 132, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Epopterus ocellatus var. figured, pl. vii, fig. 19, Biol. Centr. Am. Col. vii.

E. comptus, pl. vii, fig. 20, *scalaris*, fig. 21, Nicaragua, p. 130, *pantherinus*, Panama, fig. 22, p. 131, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Mycella clavicornis, N. S. Wales, BLACKBURN, p. 366, P. Linn. Soc. N.S.W. (2) v, n. sp.

Rhymbus limbatus, figured, pl. viii, fig. 12; Biol. Centr. Am. Col. vii.

R. piceus, Panama, pl. viii, fig. 13, p. 143, *fibulatus*, Mexico, *vestitus*, Panama, p. 144, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Stenotarsus circumdatus, pl. vii, fig. 25, *globosus*, pl. viii, fig. 6, *angustulus*, pl. vii, fig. 23, *claviger*, pl. viii, fig. 10, *maculicollis*, fig. 11, figured; Biol. Centr. Am. Col. vii.

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¹*Systacheu*, n. g. (near *Stenotarsus*), p. 132, for *S. cyanoptera*, pl. vii, fig. 24, *championi*, pl. viii, fig. 3, n. spp., Panama, p. 133 ; GORHAM, Biol. Centr. Am. Col. vii.

COCCINELLIDÆ.

[*Cf.* BLACKBURN (60, 64), FAIRMAIRE (476), REITTER (648), SEMENOW (770), WEISE (900, 901).]

Chilocorus baileyi, Australia, BLACKBURN, p. 1275, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Coccidula conferta, Paskau, *lithophiloides*, Ordubad, REITTER, Deutsche e. Z. 1890, p. 176, n. sp.

Coccinella nova-zealandica figured ; KOEBELE, Bull. Dep. Agric. Ent. xxi, p. 25.

C. elegantula, Mongolia, WEISE, p. 487, Hor. Ent. Ross. xxiv, n. sp.

Epilachna discincta, Honduras, WEISE, Deutsche e. Z. 1890, p. 21, n. sp.

Eriopsis latepicta, Patagonia, FAIRMAIRE, N. Arch. Mus. (3) i, p. 135, n. sp.

Hyperaspis erythrocephala, Fab., referred to *Oxynychus*, Lec. ; WEISE, p. 489, Hor. Ent. Ross. xxiv.

Ithone degenerata, Kundshut, SEMENOW, p. 226, Hor. Ent. Ross. xxiv, n. sp.

¹*Niteta*, n. g., near *Sticholotis*, p. 21, for *N. 14-punctata*, Manilla, 12-punctata, Borneo, p. 22 : WEISE, Deutsche e. Z. 1890.

Novius ruber, Australia, BLACKBURN, Tr. R. Soc. S. Austr. xii, p. 148, n. sp.

Oxynychus alexandrae, Mongolia, WEISE, p. 488, Hor. Ent. Ross. xxiv, n. sp.

Rhizobius ventralis, Er., = (*Scymnus restitutor*, Shp.) ; KOEBELE, Bull. Dep. Agric. Ent. xxi, p. 14, note.

Scymnus (Pullus) mongolicus, p. 490, Mongolia, *S. obsoletus*, Amdo, p. 491, WEISE, Hor. Ent. Ross. xxiv, n. spp.

Vedalia cardinalis, habits in Australia ; KOEBELE, Bull. Dep. Agric. Ent. xxi.

CORYLOPHIDÆ.

[*Cf.* MATTHEWS (516).]

Corylophus reitteri, Corfu, MATTHEWS, Wien. ent. Z. ix, p. 151, n. sp.

Rhyphobius obtusus, Sicily, MATTHEWS, Wien. ent. Z. ix, p. 152, n. sp.

Sucium marseulii, France, MATTHEWS, Wien. ent. Z. ix, p. 151, n. sp.

Sericoderus brevicornis, Europe ?, MATTHEWS, Wien. ent. Z. ix, p. 151, n. sp.

(B.) HYMENOPTERA.

Remarks on Fourcroy's and Geoffroy's nomenclature of *Hymenoptera* ;
DALLA TORRE, Wien. ent. Z. ix, p. 141.

New signs for distinguishing the sexes proposed by DALLA TORRE,
Wien. ent. Z. ix, p. 97.

Fossil *Hymenoptera* ; SCUDDER (754).

Preparation of *Hymenoptera* ; KRIECHBAUMER (455).

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[Cf. ANDRÉ (8, 9), ASHMEAD (13), BEYER (52), BORRIES (74), BRUYANT (98), CAMERON (110, 111, 317), CARLET (117, 118), CARRIÈRE (120, 121), COCKERELL (139), COVILLE (154), ÉMERY (221, 222, 223, 224, 225), FOREL (272, 274, 275, 276), FOX (279, 280), HANDLIERSCH (349), HARTER (352), HOFFER (369), KOHL (437, 438), KONOW (439), MAGRETTI (504), MARCHAL (508), MAYR (520), MEUNIER (529, 530, 531), MORAWITZ (554, 555), PÉREZ (599, 600, 601), RADOŠKOWSKI (629, 630), ROBERTSON (706), SAUNDERS (721, 722, 723), SCHLETTERER (735, 737), SCUDDER (754), VERHOEFF (859), WASMANN (881, 882), WESENBERG-LUND (906).]

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Geographical distribution of bees ; PÉREZ (601). Geographical distribution of bees of S.W. France ; PÉREZ (600).

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Agapostemon cæruleus, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 7, n. sp.

Andrena, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 418, pl. iv, figs. 1-3. *A. trimmerana* var. = (*rosæ*, Pz.) ; PERKINS, Ent. M. M. (2) i, p. 206.

A. meliloti, *salicis*, pp. 322 & 384, *denticornis*, p. 323, *fischeri*, pp. 324 & 384, Germany, *pectoraloides*, p. 384, *germanica*, p. 385, Crefeld, VERHOEFF, Ent. Nachr. xvi, n. spp.

Anthidium : tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 425, pl. viii, figs. 5-7:

A. orizabæ, n. n. for *atriventre*, Sm., *indescriptum*, n. n. for *cognatum*, Sm., DALLA-TORRÈ, Wien. ent. Z. ix, p. 139 ; *A. breviusculum*, S.W. France, PÉREZ, p. 190, Act. Soc. L. Bord. xlv ; *A. atriceps*, Kansu,

MORAWITZ, p. 373, Hor. Ent. Ross. xxiv ; *A. mandibulare*, p. 230, *funereum*, p. 231, Chili, SCHLETTERER, Ent. Nachr. xvi : n. spp.

Anthophora: tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 428, pl. ix, figs. 7-9. *A. parietina*: nests, biology, anatomy ; WESENBERG-LUND, Ent. Med. ii, pp. 99-120, pl. ii.

A. potanini, Kanssu, p. 353, *mongolica*, S. Mongolia, p. 354, MORAWITZ, Hor. Ent. Ross. xxiv ; *A. grisea*, Chili, SCHLETTERER, Ent. Nachr. xvi, p. 234 : n. spp.

Apathus elatus and *Bombus*, their relations ; COVILLE, P. E. Soc. Wash. i, p. 200.

Apis: structure of sting and poison glands, secretion of wax ; CARLET (117, 118) : tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 430, pl. x, figs. 7 & 8.

Bombus, tongue figured ; SAUNDERS, J. L. S. xxiii, pl. x, figs. 4-6. *Bombus*, habits of species of ; COVILLE (154). *B. lapidarius*, &c., habits, food of larvæ ; HÄRTER (352). *B. calidus*, p. 503, *melanurus*, p. 504, *portschinskyi*, p. 505, male characters of ; RADOSZKOWSKI, Hor. Ent. Ross. xxiv. *B. pennsylvanicus* and *americanorum*, characters of ; *Apathus elatus* is ♂ of latter ; ROBERTSON, Ent. News, i, pp. 39-41. *B. agrorum*, *variabilis*, *mucidus* var. *mollis*, *pomorum*, var. *elegans*, *alticola*, *rajellus*, *pygmaeus*, characters and variation of in Switzerland ; FREY-GESSNER, MT. Schw. ent. Ges. viii, pp. 183-194.

B. columbicus, n. n. for *flavifrons*, Sm. ; *trinominatus*, n. n. for *modestus*, Sm. ; *secundus*, n. n. for *montivagus*, Sm. 1879, nec Sm. 1878 ; *radoszkowskyi*, n. n. for *perplexus*, Rad. ; *chinensis*, n. n. for *rufocinctus*, Mor. ; *japonicus*, n. n. for *terminalis*, Sm. 1873, nec Sm. 1870 ; *emiliae*, n. n. for *thoracicus*, Rad ; DALLA-TORRE, Wien. ent. Z. ix, p. 139. *B. araratensis*, Mount Ararat, RADOSZKOWSKI, p. 502, Hor. Ent. Ross. xxiv ; *B. kalinowskii*, Korea, RADOSZKOWSKI, p. 229, t. c. ; *B. pyrosoma*, p. 349, *potanini*, p. 350, *linguarius*, p. 351, Kanssu, MORAWITZ, Hor. Ent. Ross. xxiv ; *B. ecuadorius*, Ecuador, MEUNIER, J. Sci. Lisb. (2) ii, p. 66 : n. spp.

Calliopsis citripes, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 5, n. sp.

Ceratina flavopicta, Kanssu, MORAWITZ, p. 356, Hor. Ent. Ross. xxiv ; *C. congoensis*, Africa, MEUNIER, p. cci, Bull. Soc. Ent. Fr. 1890 : n. spp.

Chalicodoma muraria, embryology of ; CARRIÈRE (120, 121).

Chelostoma, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 426, pl. vii, figs. 1-3.

C. incertum, S.W. France, PÉREZ, Act. Soc. L. Bord. xlv, p. 189 ; *C. orientale*, Araxes Valley, SCHLETTERER, Ent. Nachr. xvi, p. 236 : n. spp.

Cilissa, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 419, pl. iv, figs. 4-6.

C. albihirta, p. 5, *nigrihirta*, *erythrogaster*, *trizonata*, p. 6, Colorado, ASHMEAD, Bull. Col. Ass. i, n. spp.

Calioxys, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 424, pl. vi, figs. 4-6. *C. latefasciata*, ♀ described ; MORAWITZ, p. 374, Hor. Ent. Ross. xxiv.

C. pergandei, Chili, SCHLETTERER, Ent. Nachr. xvi, p. 225 ; *C. dolichos*, Florida, FOX, Ent. News, i, p. 107 : n. spp.

Colletes, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 415, pl. iii, figs. 1 & 2. *C. daviesana*, n. var. *signata* ; VERHOEFF, Ent. Nachr. xvi, p. 334.

Crocisa crassicornis, Mongolia, MORAWITZ, p. 369, Hor. Ent. Ross. xxiv, n. sp.

Dasypoda, the genus and species described at length ; SCHLETTERER, B. E. Z. xxxv, pp. 11-56. *D. discincta* = (*eutoni*, Saund.) ; *id. t. c.* p. 41. *Dasypoda*, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 420, pl. v, figs. 1-3.

D. frieseana, Balkan penins., p. 42, *thomsoni*, Europe, p. 52, *longigena*, Asia Minor, p. 55, SCHLETTERER, *t. c.* ; *D. mlokosewitszi*, Mount Ararat, RADOSZKOWSKI, p. 506, Hor. Ent. Ross. xxiv : n. spp.

Dufourea, tongue described ; SAUNDERS, J. L. S. xxiii, p. 421.

D. metallica, Sze-tschuan, MORAWITZ, p. 359, Hor. Ent. Ross. xxiv, n. sp.

Epeolus, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 423, pl. vii, figs. 7 & 8.

Eucera, tongue described and figured ; SAUNDERS, J. L. S. xxiii, pl. ix, figs. 1-3.

E. (Tetralonia) placens, Chili, SCHLETTERER, Ent. Nachr. xvi, p. 233, n. sp.

Halictoides clavicus, Mongolia, p. 360, *montanus*, Sze-tschuan, p. 361, MORAWITZ, Hor. Ent. Ross. xxiv, n. spp.

Halictus, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 418, pl. iii, figs. 9-11. *H. rubicundus*, habits ; FRANCIS, P. Bristol Soc. vi, p. 213.

H. rhenanus, Germany, VERHOEFF, Ent. Nachr. xvi, p. 325 ; *H. upinensis*, Kanssu, p. 363, *nodicornis*, Mongolia, p. 364, *resplendens*, p. 365, *olivaceus*, p. 366, Kanssu, *laticeps*, Sze-tschuan, p. 367, *confluens*, Kanssu, p. 368, MORAWITZ, Hor. Ent. Ross. xxiv ; *H. forbesii*, *pectinatus*, p. 315, *nelumbonis*, *4-maculatus*, *gracilis*, p. 316, *palustris*, *cressonii*, *albipennis*, p. 317, *tegularis*, p. 318, N. America, ROBERTSON, Tr. Am. Ent. Soc. xvii : n. spp.

Heriades rubicola, S. W. France, PÉREZ, Act. Soc. L. Bord. xlv, p. 190, n. sp.

Hylæus mongolicus, p. 376, *potanini*, p. 378, *viduus*, p. 380, Mongolia, *indistinctus*, p. 382, *nigrocallosus*, p. 383, *medialis*, p. 384, Sze-tschuan, MORAWITZ, Hor. Ent. Ross. xxiv, n. spp.

Macropis, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 419, pl. iv, figs. 7-9.

Megachile, tongue described and figured ; SAUNDERS, J. L. S. xxiii, pl. viii, figs. 1 & 2.

M. buyssoni, p. 190, *pyranæa*, *deceptor*, p. 192, S. W. France, PÉREZ, Act. Soc. L. Bord. xlv ; *M. koreensis*, Korea, RADOSZKOWSKI, p. 230, Hor. Ent. Ross. xxiv ; *M. mongolica*, Ta-wan, MORAWITZ, p. 372, *t. c.* ; *M. erinacea*, p. 227, *gasperinii*, p. 228, Chili, SCHLETTERER, Ent. Nachr. xvi : n. spp.

Nomada, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 422, pl. vi, figs. 1-3.

N. hirsuta, Germany, VERHOEFF, Ent. Nachr. xvi, p. 326, n. sp.

Osmia, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 426, pl. vii, figs. 4-6 : period of appearance in Algeria and in France ; NICOLAS, CR. Ass. Fr. Sci. xviii, 1, p. 314, and 2, pp. 564-570.

Osmia medanæ, Damascus, p. 541, *doriæ*, p. 542, Lebanon, MAGRETTI, Ann. Mus. Genov. (2) ix ; *O. chinensis*, Kanssu, MORAWITZ, p. 371, Hor. Ent. Ross. xxiv : n. spp.

Panurginus nitidulus, p. 357, *picipes*, p. 358, Sze-tschuan, MORAWITZ, Hor. Ent. Ross. xxiv, n. spp.

Panurgus, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 420, pl. v, figs. 4-6.

P. rufocinctus, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 4, n. sp.

Parevaspis erythros, W. Africa, MEUNIER, Bull. Ent. Ital. xxi, p. 115, n. sp.

Prosopis, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 416, pl. iii, figs. 3-5.

P. damascena, Syria, MAGRETTI, Ann. Mus. Genov. (2) ix, p. 537 ; *P. nelumbonis*, N. America, ROBERTSON, Tr. Am. Ent. Soc. xvii, p. 318 : n. spp.

Psithyrus, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 430, pl. x, figs. 1-3,

Rophites, tongue described ; SAUNDERS, J. L. S. xxiii, p. 421.

Sabulicola, n. g. (*Acutilinguæ*), pp. 328 & 386, for *S. cirsii*, n. sp., Nor-derney I., p. 329 ; VERHOEFF, Ent. Nachr. xvi.

Saropoda, tongue figured ; SAUNDERS, J. L. S. xxiii, pl. ix, figs. 4-6.

Sphecodes, tongue described and figured ; SAUNDERS, J. L. S. xxiii, p. 417, pl. iii, figs. 6-8. *S. gibbus*, habits, &c. ; MARCHAL (508).

Stelis japonica, Japan, CAMERON, p. 19, Mem. Soc. Manch. (4) ii, n. sp.

Xylocopa frontalis, n. var. *quadrimaculata* ; MEUNIER, J. Sci. Lisb. (2) ii, p. 64.

VESPIDÆ.

Odynerus crassicornis, habits ; LANCELEVÉE, Bull. Soc. Elbeuf. 1889, p. 50. *O. parietum*, varietal note ; VERHOEFF, Ent. Nachr. xvi, p. 334.

O. kalinowskii, Korea, RADOSZKOWSKI, p. 231, Hor. Ent. Ross. xxiv, n. sp.

Polybia sp., nest noticed ; LUCAS, p. xcvi, Bull. Soc. Ent. Fr. 1890.

Rhynchium seuli, Korea, RADOSZKOWSKI, p. 231, Hor. Ent. Ross. xxiv, n. sp.

Vespa, notes on the male characters of the European species ; KONOW, Soc. Ent. iv, p. 151, &c. *V. crabro*, colossal nest of ; Ent. Tidskr. xi, p. 18.

CRABRONIDÆ.

Ammophila occipitalis, p. 583, *ruficollis*, p. 586, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxiv ; *A. buddha*, p. 94, *orientalis*, p. 96, *vischu*, p. 98, *kirticeps*, p. 99, *violaceipennis*, p. 100, E. India, CAMERON, Mem. Soc. Manch. (4) ii : n. spp.

Ammoplanus (?) *columbianus*, N. America, KOHL, p. 61, Ann. Hof-museum Wien, v, n. sp.

Anthophilus desertorum, Transcaspian region, MORAWITZ, p. 607, Hor. Ent. Ross. xxiv, n. sp.

Aphilanthops quadrinotatus, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 7 ; *A. marginipennis*, pl. vii, fig. 1, p. 105, *punctifrons*, fig. 2, p. 106, Mexico, CAMERON, Biol. Centr. Am. Hym. ii : n. spp.

Aporus lugubris, Bonn, VERHOEFF, Ent. Nachr. xvi, pp. 327 & 382, n. sp.

Astata maculifrons, p. 149, *argenteofacialis*, *nigricans*, p. 151, E. India, CAMERON, Mem. Soc. Manch. (4) ii ; *A. albobillosa*, Guatemala, p. 65, pl. v, fig. 3, *apicipennis*, fig. 1, p. 66, *tinctipennis*, p. 67, *kohli*, fig. 2, p. 68, *alpestris*, fig. 4, p. 69, Mexico, CAMERON, Biol. Centr. Am. Hym. ii : n. spp.

Bembex multipicta, pl. vi, fig. 18, ♂ organ, fig. 17, description, p. 100, *monodonta*, figs. 20 & 2a, *nubilipennis*, fig. 19, figured ; CAMERON, Biol. Centr. Am. Hym. ii.

Bembidula, monograph of ; HANDLIRSCH, SB. Ak. Wien. xcvi, pp. 473-503. *B. discisa*, pl. vi, figs. 12 & 13, p. 95, *variegata*, fig. 14, p. 96, *burmeisteri*, fig. 15, p. 96, redescribed ; CAMERON, Biol. Centr. Am. Hym. ii.

B. micans, S. Brazil, p. 477, *odontophora*, Peru, p. 482, *diadonta*, Mexico, p. 484, *mendica*, Argentine Rep., p. 490, *viduata*, Huastec, p. 491, *insidiatrix*, p. 494, *capnoptera*, p. 497, *fodiens*, p. 499, N. America, *burmeisteri*, p. 500, America, HANDLIRSCH, SB. Ak. Wien. xcvi, n. spp.

Cemonus unicolor, F., habits, &c. ; BROGNIART, Bull. Soc. Ent. Fr. 1890, p. xciv, and LABOULBÈNE, t. c. p. cv.

Cerceris : numerous synonymical and bibliographical notes in supplement to Schletterer's monograph ; DALLA-TORRE, Wien. ent. Z. ix, pp. 199-202 & 204. *C. dichroa*, n. n. for *bicolor*, Cresson ; *smithii*, n. n. for *bicornuta*, Sm., nec Guerin ; *nevadensis*, n. n. for *elegans*, Cresson, nec Evers. ; *provancheri*, n. n. for *insignis*, Prov., nec K. ; DALLA-TORRE, Wien. ent. Z. ix, pp. 199-201 & 204. *C. binodis* noticed, p. 107, figured, pl. vii, fig. 3, *tolteca*, fig. 4, p. 109, *maximiliani*, fig. 6, p. 111, *otomia*, fig. 10, *mexicana*, fig. 12, *huasteca*, fig. 13, *semipetiolata*, fig. 14, p. 118, *subpetiolata*, fig. 18, p. 120, *imperialis*, fig. 21, p. 122, *esau*, pl. viii, fig. 1, p. 124, *acolhua*, fig. 2, *azteca*, *tepaneca*, fig. 6, p. 125, *bicornuta*, fig. 8, figures of and notes on ; CAMERON, Biol. Centr. Am. Hym. ii.

C. deserticola, p. 593, *cavicornis*, p. 596, *antennata*, p. 598, *furcata*, p. 600, *unidentata*, p. 601, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxiv ; *C. rothneyi*, p. 251, pl. x, fig. 3, *pulehra*, p. 253, fig. 5, *vischnu*,

p. 254, fig. 7, *tristis*, p. 255, fig. 7, *wroughtoni*, p. 258, fig. 9, *dentata*, p. 260, fig. 19, *sulphurea*, fig. 11, *tetradonta*, fig. 12, p. 261, *pentadonta*, p. 262, fig. 13, *nebulosa*, p. 265, fig. 15, E. India, CAMERON, Mem. Soc. Manch. (4) iii ; *C. montezuma*, p. 108, *strigosa*, pl. vii, fig. 5, p. 110, *aureofucialis*, p. 112, *geniculata*, pl. vii, fig. 7, *feralis*, p. 113, Mexico, *chiriquensis*, Panama, pl. vii, fig. 8, p. 114, *flavomaculata*, Costa Rica, fig. 9, p. 115, *flavida*, Mexico, p. 116, *marginata*, Costa Rica, fig. 11, p. 117, *obsoleta*, fig. 15, p. 118, *montivaga*, fig. 16, *smithiana*, fig. 17, p. 119, *truncata*, fig. 19, p. 121, *curvicornis*, pl. viii, fig. 3, *hebes*, fig. 4, p. 124, *erythropoda*, fig. 7, p. 126, *trichiosoma*, p. 127, Mexico, *pilosa*, Guatemala, fig. 9, p. 128, CAMERON, Biol. Centr. Am. Hym. ii : n. spp.

Ceropales, habits noticed ; PEREZ, p. cix, Bull. Soc. Ent. Fr. 1890.

Chalybion cæruleum, habits ; SCHWARZ, P. E. Soc. Wash. i, p. 254.

Chlorion semenovi, Transcaspien region, MORAWITZ, p. 570, Hor. Ent. Ross. xxiv, n. sp.

Crabro mesopleuralis, p. 613, *pallidicornis*, p. 614, Transcaspien region, MORAWITZ, Hor. Ent. Ross. xxiv ; *C. odontophora*, p. 271, pl. x, fig. 20, *orientalis*, p. 272, *ardens*, p. 273, *nanus*, p. 274, E. India, CAMERON, Mem. Soc. Manch. (4) iii : n. spp.

Dielis araratica, Mount Ararat, RADOSZKOWSKI, p. 507, Hor. Ent. Ross. xxiv, n. sp.

Diodontus handlirschii, Tyrol, KOHL, Ann. Hofmuseum Wien, v, p. 58, n. sp.

D. ruficornis, Transcaspien region, MORAWITZ, p. 612, Hor. Ent. Ross. xxiv, n. sp.

Elis villosa, sexual variation in neururation ; SAUNDERS, Ent. M. M. (2) i, p. 291.

Gastrosericus wroughtoni, *rothneyi*, E. India, CAMERON, p. 147, Mem. Soc. Manch. (4) ii, n. spp.

Gorytes bipunctatus, pl. v, fig. 11, *fuscus*, fig. 10, *spilopterus*, fig. 16, figured ; Biol. Centr. Am. Hym. ii. *G. amatorius*, Sm., redescribed ; CAMERON, p. 240, pl. ix, fig. 15, Mem. Soc. Manch. (4) iii.

G. handlirschii, Transcaspien region, MORAWITZ, p. 610, Hor. Ent. Ross. xxiv ; *G. championi*, Guatemala, p. 72, *maculipennis*, Panama, pl. v, fig. 12, p. 73, *punctifrons*, fig. 13, p. 74, *fasciatipennis*, fig. 14, p. 75, *mexicanus*, fig. 15, p. 76, *montanus*, fig. 17, p. 77, *handlirschi*, fig. 18, p. 78, *fuscipennis*, fig. 19, p. 79, Mexico, *balteatus*, Guatemala, fig. 20, p. 80, *alticola*, fig. 21, p. 81, *alpestris*, fig. 22, p. 83, *centralis*, pl. vi, fig. 1, p. 84, Mexico, CAMERON, Biol. Centr. Am. Hym. ii : n. spp.

Homogambrus major, Transcaspien region, MORAWITZ, p. 591, Hor. Ent. Ross. xxiv, n. sp.

Hoplisis foveolata, Florida, FOX, Ent. News, i, p. 106, n. sp.

Larra : *Larrada rufipes*, *prismatica*, *glabrata*, Smith, referred to this ; CAMERON, Ent. M. M. (2) i, p. 314.

L. fuscipennis, p. 126, *nigriventris*, p. 127, E. India, CAMERON, Mem. Soc. Manch. (4) ii, n. spp.

Liris nigripennis, E. India, CAMERON, Mem. Soc. Manch. (4) ii, p. 131, n. sp.

Mellinus pygmæus figured, pl. v, fig. 5, Biol. Centr. Am. Hym. ii.

M. alpestris, Mexico, CAMERON, pl. v, fig. 6, p. 85, Biol. Centr. Am. Hym. ii, n. sp.

Meria brevicauda, p. 628, *immatura*, p. 630, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxiv, n. spp.

Methoca picipes, Transcaspian region, MORAWITZ, p. 632, Hor. Ent. Ross. xxiv, n. sp.

Miscophus metallicus, Bonn, VERHOEFF, Ent. Nachr. xvi, pp. 327 & 383 ; *M. americanus*, New Jersey, FOX, Ent. News, 1, p. 138 : n. spp.

Monedula : monograph of ; HANDLIRSCH, SB. Ak. Wien, xcix, pp. 77-166. *M. heros* figured, pl. vi, fig. 21, redescribed, p. 98, *surinamensis* figured, fig. 23, *signata*, fig. 22, *punctata*, fig. 24, ♂ organs figured ; CAMERON, Biol. Centr. Am. Hym. ii.

M. andrei, Peru, p. 94, *pantherina*, S. America, p. 95, *volucris*, Colombia, p. 96, *proserpina*, Peru, p. 99, *vivida*, Mexico, p. 101, *dives*, p. 106, *mexicana*, p. 107, *medea*, Brazil, *antiopa*, Savanne, p. 109, *denticornis*, Peru, p. 119, *adumbrata*, Para, p. 120, *gravida*, Brazil, p. 121, *cæsarea*, San Paulo, p. 124, *diana*, p. 127, *adonis*, p. 130, Brazil, *odontomera*, S. America ?, p. 134, *vulpina*, Chili, p. 138, *serrata*, p. 143, *inermis*, p. 144, *mammillata*, p. 146, *minutula*, p. 148, *pulla*, p. 150, N. America, HANDLIRSCH, SB. Ak. Wien, n. spp.

✓*Neolarra*, n. g., *Bembecidæ*, for *N. pruinosa*, n. sp., Colorado ; ASHMEAD, p. 8, Bull. Col. Ass. i.

Notogonia ; *Larrada alecto*, *exilipes*, *laborosa*, *tisiphone*, *tristis*, *vestita*, *modesta*, *ducalis*, *docilis*, Smith, are referred to this ; CAMERON, Ent. M. M. (2) i, p. 314.

N. pulchripennis, E. India, CAMERON, p. 129, Mem. Soc. Manch. (4) ii, n. sp.

Nysson decemnotatus, Transcaspian region, MORAWITZ, p. 609, Hor. Ent. Ross. xxiv ; *N. rugosus*, p. 242, pl. ix, fig. 13, *erythropoda*, p. 243, fig. 18, E. India, CAMERON, Mem. Soc. Manch. (4) iii : n. spp.

Oxybelus : synonymic and bibliographic observations supplementing Kohl's list of species ; DALLA-TORRE, Wien. ent. Z. ix, pp. 202 & 203. *O. packardi*, n. n. for *O. mucronatus*, Packd. ; DALLA-TORRE, t. c. p. 203.

O. robustus, p. 276, pl. x, fig. 21, *flavipes*, p. 277, *canescens*, p. 278, fig. 22, *fulvopilosus*, p. 279, fig. 23, *bellus*, p. 280, *nitidus*, p. 281, *argenteolineatus*, E. India, *lewisi*, Japan, p. 282, CAMERON, Mem. Soc. Manch. (4) iii : n. spp.

Palarus bisignatus, p. 587, *pictiventris*, p. 589, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxiv, n. spp.

Parapsammophila turanica, Transcaspian region, MORAWITZ, p. 582, Hor. Ent. Ross. xxiv, n. sp.

Passalæcus roettgeni, Germany, VERHOEFF, Ent. Nachr. xvi, p. 383, n. sp.

Pemphredon nearcticus, Nevada, KOHL, p. 55, Ann. Hofmuseum Wien, v, n. sp.

↓ *Philanthocephalus*, n. g. (*Nyssonides*, near *Mellinus*), p. 86, for *P. hirticeps*, pl. vi, fig. 2, p. 87, *maculiceps*, fig. 3, *gracilis*, fig. 4, p. 88, *mexicanus*, fig. 5, p. 89, Mexico, *punctifrons*, fig. 7, p. 90, Panama, n. spp.; CAMERON, Biol. Centr. Am. Hym. ii.

Philanthus komarowi, p. 603, *kohlii*, p. 605, Transcasian region, MORAWITZ, Hor. Ent. Ross. xxiv; *P. eurynome*, Florida, Fox, Ent. News, i, p. 107 : n. spp.

Piagetia fasciatiipennis, Ceylon, CAMERON, p. 16, Mem. Soc. Manch. (4) ii; *P. ruficornis*, E. India, CAMERON, p. 134, t. c. : n. spp.

Plesia picticollis, p. 624, *dubia*, p. 627, Transcasian region, MORAWITZ, Hor. Ent. Ross. xxiv, n. spp.

Pompilus as ectoparasites; BORRIES (74).

P. speciosus, Bonn, VERHOEFF, Ent. Nachr. xvi, p. 328; *P. cyphonotus*, p. 617, *pubescens*, p. 618, *ruficornis*, p. 619, *deserticola*, p. 620, *excisus*, p. 622, *anthracinus*, p. 623, Transcasian region, MORAWITZ, Hor. Ent. Ross. xxiv : n. spp.

Psammophila arenaria, *affinis*, distinctive characters; VERHOEFF, Ent. Nachr. xvi, p. 334.

Psen rufiventris, p. 267, *clavatus*, p. 268, *orientalis*, p. 269, E. India, CAMERON, Mem. Soc. Manch. (4) iii, n. spp.

Rhinopsis ruficornis, E. India, CAMERON, p. 115, Mem. Soc. Manch. (4) ii, n. sp.

Rhopalum buddha, E. India, CAMERON, Mem. Soc. Manch. (4) ii, p. 18, n. sp.

Salix atripennis, Transcasian region, MORAWITZ, p. 615, Hor. Ent. Ross. xxiv, n. sp.

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Aphaenogaster subterranea, Latr., characters and varieties noticed ; FOREL, p. lxx, C.R. Ent. Belg. 1890. *A. testaceopilosa*, varr. described ; SAUNDERS, Ent. M. M. (2) i, p. 204, woodcuts.

A. phalangium, p. 47, pl. v, figs. 6 & 7, *araneoides*, p. 48, fig. 8, Costa Rica, EMERY, Bull. Ent. Ital. xxii ; *A. (Ischnomyrmex) fœæ*, Tenasserim, EMERY, Ann. Mus. Genov. (2) vii, p. 503, pl. xi, fig. 26 : n. spp.

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Cerapachys sulcinodis, Tenasserim, EMERY, Ann. Mus. Genov. (2) vii, p. 493, n. sp.

Cremastogaster (sub *Formica*) *platygnatha*, Rog., = (*mandibularis*, And.); ANDRÉ, p. 323, Rev. d'Ent. ix. *C. inermis*, n. var. *lucidus*; FOREL, Le Nat. xii, p. 218.

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Diacamma, generic characters of ♂; EMERY, p. 496, Ann. Mus. Genov. (2) vii.

D. longitudinale, Cochin China, EMERY, Ann. Mus. Genov. (2) vii, n. sp.

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✓ *Emergyia*, n. g., near *Cardiocondyla*, p. cx, for *E. wroughtonii*, n. sp., Poona, p. cxi; FOREL, C.R. Ent. Belg. 1890.

Epitritus emmæ, St. Thomas, EMERY, Bull. Ent. Ital. xxii, pl. viii, fig. 6, p. 70, n. sp.

Formica, observations on forms between female and worker; WASMANN, S. E. Z. li, p. 306. *F. rufa*, sting structure and development; BEYER (52).

Glyptomyrmex uncinatus, Mayr, sexes described; EMERY, Bull. Ent. Ital. xxii, p. 70.

Harpegnathus venator, Sm., characters noticed; EMERY, Ann. Mus. Genov. (2) vii, p. 494.

✓ *Huberia*, n. g., for *Tetramorium striatum*, Sm.; FOREL, p. cv, C.R. Ent. Belg. 1890.

Iridomyrmex iniquus, n. var. *nigellus*; EMERY, Bull. Ent. Ital. xxii.

Leptogenys pubiceps, Venezuela, *punctaticeps*, Costa Rica, EMERY, p. 62, Ann. Soc. Ent. Fr. (6) x, n. spp.

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L. delaparti, Algeria, FOREL, p. lxxii, C.R. Ent. Belg. 1890, n. sp.

Liomyrmex aurianus, Tenasserim, EMERY, Ann. Mus. Genov. (2) vii, p. 504, n. sp.

Lobopelta pusilla, Costa Rica, EMERY, p. 43, Bull. Ent. Ital. xxii, n. sp.

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Meranoplus laeviventris, Tenasserim, EMERY, p. 506, pl. x, fig. 16, Ann. Mus. Genov. (2) vii, n. sp.

✓*Messor*, n. subg. of *Aphænogaster*, for *A. barbarus*, L., and *arenarius*, F.; FOREL, p. lxix, C.R. Ent. Belg. 1890.

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M. audrei, Gibraltar, SAUNDERS, Ent. M. M. (2) i, p. 204, n. sp.

Myrmecina striata, Tenasserim, EMERY, Ann. Mus. Genov. (2) vii, p. 500, n. sp.

Myrmelachista (Decamera) schumanni, Colombia, EMERY, p. 70, Ann. Soc. Ent. Fr. (6) x, n. spp.

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Myrmicaria exigua, Sierra Leone, ANDRÉ, Rev. d'Ent. ix, p. 320, n. sp.

Mystrium camillæ, Burma, EMERY, p. 491, pl. x, figs. 1-3, Ann. Mus. Genov. (2) vii, n. sp.

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✓*Ophthalmopone*, n. g., near *Megaloponera*, p. cxi, for *O. berthoudi*, n. sp., S. Africa, p. cxii; FOREL, C.R. Ent. Belg. 1890.

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P. ambigua, Sierra Leone, ANDRÉ, Rev. d'Ent. ix, p. 316; *P. rostrata*, Venezuela, EMERY, p. 59, Ann. Soc. Ent. Fr. (6) x; *P. oberthuri*, Para, p. 74, *striatinodis*, *gagatina*, Costa Rica, *procidua*, Cayenne, p. 75, EMERY, t. c. : n. spp.

Pheidole jordanica, characters noticed; EMERY, Ann. Mus. Genov. (2) vii, p. 442. *P. absurda*, For., figured and described, p. 48, pl. v, figs. 9, 10, & 11, *radowszkowskii*, r. *militaris*, n. st., p. 49, *biconstricta*, Mayr, rr. *bicolor*, n. st. *rubicunda*, n. st., p. 50, *subarmata*, Mayr, pl. v, figs. 12 & 13, p. 51, described; EMERY, Bull. Ent. Ital. xxii.

P. occipitalis, Sierra Leone, ANDRÉ, Rev. d'Ent. ix, p. 321; *P. florii*, Costa Rica, p. 51, *cornutula*, Paraguay, p. 52, pl. v, figs. 14 & 15, EMERY, Bull. Ent. Ital. xxii : n. spp.

Platythyrea occidentalis, Sierra Leone, ANDRÉ, Rev. d'Ent. ix, p. 315 ; *P. incerta*, Venezuela, EMERY, Ann. Soc. Ent. Fr. (6) x, p. 56 : n. spp.

Polyergus rufescens, forms of workers and female described ; WASMANN, S. E. Z. li, p. 302.

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Ponera guineensis, Sierra Leone, ANDRÉ, Rev. d'Ent. ix, p. 318 ; *P. rubiginosa*, Tenasserim, EMERY, Ann. Mus. Genov. (2) vii, p. 498 ; *P. nitidula*, Costa Rica, *id.*, p. 43, Bull. Ent. Ital. xxii ; *P. leveillei*, *denticollis*, Venezuela, *id.* p. 61, Ann. Soc. Ent. Fr. (6) x : n. spp.

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✓*Psalidomyrmex*, n. g., near *Belonopelta*, Mayr, p. 313, for *P. foveolatus*, n. sp., Sierra Leone, p. 314 ; ANDRÉ, Rev. d'Ent. ix.

Rhopalothrix simoni, Venezuela, EMERY, p. 67, Ann. Soc. Ent. Fr. (6) x, n. sp.

Sima mocquersyi, Sierra Leone, ANDRÉ, Rev. d'Ent. ix, p. 319 ; *S. subtilis*, Burma, EMERY, Ann. Mus. Genov. (2) vii, p. 500, pl. xi, figs. 24 & 25 : n. spp.

Solenopsis orbuloïdes, Sierra Leone, ANDRÉ, Rev. d'Ent. ix, p. 321 ; *S. succinea*, Costa Rica, EMERY, Bull. Ent. Ital. xxii, p. 52 : n. spp.

✓*Spalacomyrmer*, n. g., *Poneridæ*, near *Myopopone*, p. 489, for *S. feæ*, n. sp., Burma, p. 491, pl. x, figs. 11–15 ; EMERY, Ann. Mus. Genov. (2) vii.

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Temnothorax, Mayr, merged in *Leptothorax* ; FOREL, p. lxxii, C.R. Ent. Belg. 1890.

Tetramorium nitidum, swarming of ; SMITH, Ent. M. M. (2) i, p. 321.

Trapeziopelta amblyops, ♀ described ; EMERY, Ann. Mus. Genov. (2) vii, p. 497.

✓*Triglyphothrix*, n. g., near *Tetramorium*, p. cvi, for *T. walshi*, n. sp., E. India, p. cvii ; FOREL, C.R. Ent. Belg. 1890.

✓*Trigonogaster*, n. g., near *Pheidole*, p. cviii, for *P. recurvispinosus*, n. sp., Poona, p. cix ; FOREL, C.R. Ent. Belg. 1890.

Typhlomyrmex rogenhoferi, r. *robustus*, n. st. ; EMERY, Bull. Ent. Ital. xxii, p. 40.

Vollenhovia lævithorax, Tenasserim, EMERY, Ann. Mus. Genov. (2) vii, p. 501, n. sp.

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[*Cf.* ANDRÉ (8), ASHMEAD (12, 13, 14, 15), BASSETT (29), BORRIES (74), BRIDGMAN (89, 90), BUGNION (100), BUYSSON (105), CAMERON (109, 110, 112), COOK (143), COQUILLETT (145), COSTA (147), CRESSON (347), GILLETTE (308, 309), HOWARD (383, 384, 385), JACOBS & TOSQUINET (393), JAROCHEWSKY (408), KRIECHBAUMER (452, 453, 454, 456, 457), KULAGIN (460), MAGRETTI (504), MOCSÁRY (547), PROVANCHER (621), RILEY (692), RILEY & HOWARD (695), SCHLETTERER (736), SCHMIEDENECHE (742), SCUDDER (754), THOMSON (850), VERHOEFF (859), WEED (895, 896).]

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✓ *Holophris*, n. subg. of *Ellampus*, for *E. (H.) marginellus*, n. sp., Sumatra ; MOCSÁRY, p. 51, Term. füzetek, xiii.

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pp. 90-96. List of the parasites of *Ocneria dispar*; RILEY & HOWARD, Ins. Life, ii, p. 210. List of 63 parasites of *Cheimatobia brumata*, Ins. Life, iii, p. 76.

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Agrypon puparum, *boreale*, N. America, ASHMEAD, p. 424, P. U. S. Nat. Mus. xii, n. spp.

Amblyteles binotatus, Munich, KRIECHBAUMER, Ent. Nachr. xvi, p. 350; *A. contractus*, Alaska, *cookii*, Michigan, ASHMEAD, p. 392, P. U. S. Nat. Mus. xii : n. spp.

Anomalon sp., oviposition of; GILLETTE, p. 139, Ent. News, i. *A. flavifrons*, Gr., = (*cerinops*, Gr.), *ruficorne*, Gr., = (*gliscens*, Hart.), DALLA-TORRE, Wien. ent. Z. ix, p. 140.

A. xanthopsis, *eureka*, *simile*, California, ASHMEAD, p. 423, P. U. S. Nat. Mus. xii, n. spp.

Apæleticus brevicornis, Munich, p. 203, KRIECHBAUMER, Ent. Nachr. xvi, n. sp.

(*Apechoneura*, n. g., *Pimplides*, p. 485, for *Rhyssa terminalis*, Brullé, and *A. longicauda*, p. 486, *brevicauda*, p. 487, n. spp., Brazil; KRIECHBAUMER, Ann. Hofmuseum Wien, v.

Atractodes politus, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 23, n. sp.

Bassus, revision of the genera allied to; THOMSON, Opusc. Ent. xiv, pp. 1459-1525.

B. varicoxa, p. 1468, *deletus*, p. 1471, N. Europe, THOMSON, Opusc. Ent. xiv; *B. syrphicola*, *orbitalis*, p. 439, *xanthopsis*, *euura*, California, *virginensis*, Virginia, p. 440, ASHMEAD, P. U. S. Nat. Mus. xii : n. spp.

Brachycentrus fasciatus, Texas, ASHMEAD, p. 413, P. U. S. Nat. Mus. xii, n. sp.

Bremia, n. g., *Tryphonides*, p. 209, for *B. pulchella*, n. sp., Switzerland, p. 210; KRIECHBAUMER, MT. Schw. ent. Ges. viii.

Campoplex texanus, N. America, ASHMEAD, p. 427, P. U. S. Nat. Mus. xii, n. sp.

Casinaria texana, N. America, ASHMEAD, p. 427, P. U. S. Nat. Mus. xii; *C. americana*, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 22 : n. spp.

Catulytus pallipes, N. America, ASHMEAD, p. 419, P. U. S. Nat. Mus. xii, n. sp.

Catoglyptus antilope, ♂ described; JACOBS & TOSQUINET, Ann. Ent. Belg. xxxiv, p. 54.

Charops annulipes, Missouri, ASHMEAD, p. 425, P. U. S. Nat. Mus. xii, n. sp.

Chorinaus flavifrons, Wisconsin, ASHMEAD, p. 444, P. U. S. Nat. Mus. xii, n. sp.

Chistopyga pulchripicta, *pleuralis*, N. America, ASHMEAD, p. 448, P. U. S. Nat. Mus. xii, n. spp.

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Cremnoides californicus, Los Angeles, ASHMEAD, p. 420, P. U. S. Nat. Mus. xii, n. sp.

Crypturus texanus, p. 413, *albomaculatus*, p. 414, N. America, ASHMEAD, P. U. S. Nat. Mus. xii, n. sp.

Cryptini: revision of the European genera and species, with tabular characters ; SCHMIEDEKNECHT, Ent. Nachr. xvi, pp. 81, &c.

Cryptus rubricator, Pz., = (*minutorius*, Fab., and *minor*, Thunb.), *constrictor*, Fab., being a var. ; DALLA TORRE, Wien. ent. Z. ix, p. 140. *C. migrator*, Gr., n. var. *intermedius* ; VERHOEFF, Ent. Nachr. xvi, p. 332. *C. samie*, Pack., ovipositor of ; RIEDERER, J. N. Y. Micr. Soc. vi, pp. 99-101, pl. xxv.

C. violaceipennis, *coloradensis*, p. 408, *leucopus*, *alamedensis*, p. 409, *monticola*, *texensis*, p. 410, *armatus*, *nigripennis*, *hirtifrons*, *californicus*, p. 411, *ferrugineus*, *brevicauda*, *nebraskensis*, p. 412, N. America, ASHMEAD, P. U. S. Nat. Mus. xii, n. spp.

↓ *Demophorus*, n. g., near *Cremastus*, for *D. arenicola*, p. 1457, *amellatus*, p. 1458, n. spp., Sweden ; THOMSON, Opusc. ent. xiv.

↓ *Diphyes*, n. g. (*Ichneumonilarum*), for *D. tricolor*, n. sp., Tegernsee ; KRIECHBAUMER, p. 184, Ent. Nachr. xvi.

↓ *Dolichops elephus*, n. g., near *Atractodes*, for *D. cockerelli*, n. sp., Colorado ; ASHMEAD, p. 23, Bull. Col. Ass. i.

↓ *Dyseidopus*, n. g., *Pimplides*, p. 489, for *D. sericeus*, n. sp., Brazil, p. 490 ; KRIECHBAUMER, Ann. Hofmuseum Wien, v.

Ephialtes violaceus, ♀ described ; KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 488.

Epimecis fasciata, Br., ♀ described ; KRIECHBAUMER, p. 490, Ann. Hofmuseum Wien, v.

E. heteropus, Brazil, KRIECHBAUMER, p. 491, Ann. Hofmuseum Wien, v, n. sp.

Eristicus minutus, *erythrogaster*, *apicalis*, p. 388, *basilaris*, *cinctus*, *binotatus*, p. 389, Wisconsin, ASHMEAD, P. U. S. Nat. Mus. xii, n. spp.

Euceros pruinosus, Gr., = (*crassicornis*, Gr.) ; DALLA TORRE, Wien. ent. Z. ix, p. 139.

Exephanes (?) *caelebs*, Sonderburg, KRIECHBAUMER, Ent. Nachr. xvi, p. 289, n. sp.

Exochilum texanum, N. America, ASHMEAD, p. 426, P. U. S. Nat. Mus. xii, n. sp.

Exochus rufigaster, Texas, ASHMEAD, p. 443, P. U. S. Nat. Mus. xii, n. sp.

Exolytus gelechiæ, California, ASHMEAD, p. 397, P. U. S. Nat. Mus. xii, n. sp.

Glypta: tabular characters of the British species, with list of their hosts; BRIDGMAN, Tr. Norw. Soc. v, pp. 66-72. *G. cicatricosa*, *flavipes*, ♀♀ described; BRIDGMAN, Ent. M. M. (2) i, p. 208.

G. rubicunda, p. 70 (and Ent. M. M. (2) i, p. 209), *annulata*, p. 71, Britain, BRIDGMAN, Tr. Norw. Soc. v; *G. tricineta*, N. America, PROVANCHER, Nat. Canad. xix, p. 248; *G. leucozonata*, *xanthozonata*, N. America, ASHMEAD, p. 449, P. U. S. Nat. Mus. xii: n. spp.

Hemiteles stigmatus, *cincticornis*, p. 21, *alticola*, p. 22, Colorado, ASHMEAD, Bull. Col. Ass. i; *H. belfragei*, *melitææ*, p. 399, *coleophoræ*, *variegatus*, *nigriceps*, p. 400, *gracilaria*, *bucculatricis*, *hydrophilus*, p. 401, *annulatus*, *columbianus*, *rileyi*, p. 402, *bicornutus*, *annulicornis*, *albiscapus*, p. 403, *mellicornis*, *hemerobii*, *texanus*, *virginiensis*, p. 404, *rubricornis*, *townsendi*, *syrphicola*, p. 405, *pallidus*, p. 406, N. America, ASHMEAD, P. U. S. Nat. Mus. xii, n. spp.

Herpestomus plutellæ, N. America, ASHMEAD, p. 396, P. U. S. Nat. Mus. xii, n. sp.

✓*Homoporus*, n. g., p. 1488, for a part of *Bassus* auct., and including the following n. spp., viz., *brevitarsis*, p. 1495, *caudatus*, p. 1499, *punctiventris*, p. 1500, *nigricornis*, p. 1506, *brevicornis*, p. 1507, *incisus*, p. 1511, *longiventris*, p. 1514, *crassicus*, *megaspis*, p. 1516, *xanthaspis*, p. 1518, *hygrobius*, p. 1524, N. and Centr. Europe, THOMSON, Opusc. Ent. xiv.

Hoplismenus cornix, Steiermark, KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 481, n. sp.

Ichneumon aries, Kr., ♂ described, p. 151; *bucculentus*, ♂ noticed, p. 181; *immisericors*, Tischb., note on, p. 182; *I. tenuicornis* and *Platylabus niger*, Wesm., discussed, p. 199; *alboguttatus*, ♀, varietal note, p. 349; KRIECHBAUMER, Ent. Nachr. xvi. *I. illuminatorius*, ♀ (= *zonalis*, Gr.); DALLA TORRE, Wien. ent. Z. ix, p. 140. *I. pulvinatus*, n. var.; KRIECHBAUMER, Ann. Hofmuseum Wien, p. 480.

I. eurycerus, p. 1528, *corfitzi*, p. 1530, Sweden, THOMSON, Opusc. Ent. xiv; *I. wustneii*, p. 290, *oviventris*, p. 291, *hercynicus*, p. 292, *lunuliger*, p. 293, *basiglyptus*, p. 294, Germany, KRIECHBAUMER, Ent. Nachr. xvi; *I. ophiusæ*, p. 479, *cinxiæ*, p. 480, Vienna, *id.* Ann. Hofmuseum Wien, v; *I. 5-albatus*, Switzerland, *id.* MT. Schw. ent. Ges. viii, p. 235; *I. crassigena*, Munich, p. 152, *puerulus*, Tegernsee, p. 182, *id.* Ent. Nachr. xvi; *I. magdalensis*, N. America, PROVANCHER, Nat. Canad. xix, p. 246; *I. xanthopsis*, *xanthogrammus*, p. 390, *fulvopictus*, *leucopsis*, p. 391, N. America, ASHMEAD, P. U. S. Nat. Mus. xii: n. spp.

Ischnidium, n. n. for *Ischnogaster* (*infra*); KRIECHBAUMER, Ent. Nachr. xvi, p. 351.

Ischnocerus montanus, Colorado, ASHMEAD, p. 418, P. U. S. Nat. Mus. xii, n. sp.

✓*Ischnogaster*, n. g. (*Ichneumonides pneustici*), p. 153, for *I. albibucca*, n. sp., Munich, p. 154; KRIECHBAUMER, Ent. Nachr. xvi (*cf. Ischnidium*).

Ischnus americanus, Kansas, ASHMEAD, p. 394, P. U. S. Nat. Mus. xii, n. sp.

Ischyrocnemis carolina, N. America, ASHMEAD, p. 443, P. U. S. Nat. Mus. xii, n. sp.

Lampronota puritana, N. America, ASHMEAD, p. 450, P. U. S. Nat. Mus. xii, n. sp.

Limneria: table of the N. American species; ASHMEAD, pp. 428–430, P. U. S. Nat. Mus. xii. *L. eurycreontis* figured; *Ins. Life*, ii, p. 328.

L. elegans, *teratis*, N. America, WEED, p. 40, Bull. Illin. Lab. N. H. iii; *L. melanocoxa*, p. 430, *nigricincta*, *nolæ*, *erythropus*, *brachyura*, p. 431, *ferrugineipes*, *occidentalis*, *gelechia*, p. 432, *solenobia*, *euura*, *sessilis*, p. 433, *erythrogaster*, *pattoni*, *eurycreontis*, p. 434, *consimilis*, *peraffinis*, *belfragei*, *ptero-phoræ*, p. 435, *flavicincta*, *cedemasia*, *eureka*, p. 436, *salicicola*, *cupressi*, *noctue*, p. 437, N. America, ASHMEAD, P. U. S. Nat. Mus. xii: n. spp.

Liogaster longulus, N. Germany, KRIECHBAUMER, Ent. Nachr. xvi, p. 297, n. sp.

Lissonota ducalis, *decorata*, Armenia, COSTA, Rend. Acc. Nap. (2) iv, p. 174, n. spp.

Meniscus scapularis, ♀ described; KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 483.

Mesochorus anthracinus, Austria, from larva of *Lobophora appensata*, KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 484, n. sp.

Mesoleptus varicornis, p. 76, *xanthostomus*, p. 81, males described; JACOBS & TOSQUINET, Ann. Ent. Belg. xxxiv.

Mesolius periscelius, Germany, KRIECHBAUMER, Ent. Nachr. xvi, p. 294, n. sp.

Mesostenus erythrogaster, *leucopus*, p. 406, *leucocoxa*, p. 407, N. America, ASHMEAD, P. U. S. Nat. Mus. xii, n. spp.

Metopius xanthostigma, *terminalis*, N. America, ASHMEAD, p. 438, P. U. S. Nat. Mus. xii, n. spp.

Nematomicrus coloradensis, N. America, ASHMEAD, p. 395, P. U. S. Nat. Mus. xii, n. sp.

Nematopodius orbitalis, Colorado, ASHMEAD, p. 21, Bull. Col. Ass. i; *N. texanus*, N. America, ASHMEAD, p. 414, P. U. S. Nat. Mus. xii: n. spp.

Nototrachys annulicornis, Texas, ASHMEAD, p. 422, P. U. S. Nat. Mus. xii, n. sp.

✓ *Opisorhyssa*, n. g., for *O. flavopicta*, n. sp., N. America, KRIECHBAUMER, p. 488, Ann. Hofmuseum Wien, v.

Orthocentrus leucopsis, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 24; *O. californicus*, N. America, ASHMEAD, p. 442, P. U. S. Nat. Mus. xii: n. spp.

Orthopelma bedelliae, p. 415, *erythrope*, *minutum*, *bimaculatum*, p. 416, *occidentale*, *rosæcola*, *californicum*, p. 417, *coloradense*, *diastrophæ*, p. 418, N. America, ASHMEAD, P. U. S. Nat. Mus. xii, n. spp.

Panargyrops (sub *Cryptus*) *claviger*, Tasch., = (*ater*, Brischke); SCHMIEDEKNECHT, Ent. Nachr. xvi, p. 150.

Paniseus lineatus, Vienna, from *Cidaria corticata*, KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 484 ; *P. texanus*, *nigripictus*, Texas, ASHMEAD, p. 425, P. U. S. Nat. Mus. xii : n. spp.

Perilissus dubius (Wesm.), Belgium, JACOBS & TOSQUINET, Ann. Ent. Belg. xxxiv, p. 66. n. sp.

Pezolochus bucculatricis, Washington, ASHMEAD, p. 420, P. U. S. Nat. Mus. xii ; *P. atratus*, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 22 : n. spp.

Pezomachus flavocinctus, *californicus*, *alaskensis*, N. America, ASHMEAD, p. 421, P. U. S. Nat. Mus. xii, n. sp.

Phæogenes imbellis, Wesm., = (*subtilicornis*, Gr.) ; DALLA TORRE, Wien. ent. Z. ix, p. 140.

P. gelechiæ, p. 392, *missouriensis*, *hemiteloides*, p. 393, *ruficornis*, *montivagus*, p. 394, N. America, ASHMEAD, P. U. S. Nat. Mus. xii, n. spp.

† *Phthorimus*, n. g., for *Bassus compressus*, Desv. ; THOMSON, p. 1474, Opusc. Ent. xiv.

Phygadeuon ater, p. 20, *laticinctus*, p. 21, Colorado, ASHMEAD, Bull. Col. Ass. i, n. spp.

Phytodietus vetulus and *chrysostomus*, Gr., are sexes, the latter name to be used ; DALLA TORRE, Wien. ent. Z. ix, p. 139.

Pimpla ruficollis, Gr., characters of ; *concors*, ♂ ♀ ; *stramentaria*, ♀, described ; KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 483. *P. maculata*, Fab., = (*scanica*, Vill.) ; DALLA TORRE, Wien. ent. Z. ix, p. 139.

P. triangularis, Bonn, VERHOEFF, Ent. Nachr. xvi, pp. 331 & 386 ; *P. grapholithæ*, N. America, CRESSON, Ent. News, i, p. 50 ; *P. minuta*, N. America, WEEB, Bull. Illin. Lab. N. H. iii, p. 41 ; *P. sexcincta*, Colorado, ASHMEAD, p. 24, Bull. Col. Ass. i ; *P. yukonensis*, *pterophori*, *gossypii*, pp. 445, *acanthothorax*, *aplopappi*, p. 446, *euura*, *lithocolletidis*, p. 447, N. America, ASHMEAD, P. U. S. Nat. Mus. xii : n. spp.

Platylabus albinus, Gr., = (*errabundus*, Gr.) ; DALLA TORRE, Wien. ent. Z. ix, p. 140.

P. auriculatus, Tegernsee, p. 200, *lariciata*, Arolsen, p. 202, KRIECHBAUMER, Ent. Nachr. xvi ; *P. fornicatus*, Vienna, KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 482 : n. spp.

Plectocryptus scansor, Sweden, THOMSON, p. 1532, Opusc. Ent. xiv, n. sp. *Polysphincta* as external parasites ; BORRIES (74).

P. rufigaster, Texas, ASHMEAD, p. 447, P. U. S. Nat. Mus. xii, n. sp.

Prionopoda scutellata, Washington, ASHMEAD, p. 441, P. U. S. Nat. Mus. xii, n. sp.

Pristomerus pallidus, Dalmatia, THOMSON, Opusc. Ent. xiv, p. 1456, n. sp.

† *Promethus*, n. g., p. 1475, for a part of *Bassus*, auct., with *P. nigri-ventris*, p. 1476, Sweden, *melanaspis*, Munich, p. 1477, *albicoxa*, Europe, p. 1479, *laticarpus*, Sweden, p. 1481, n. spp. ; THOMSON, Opusc. Ent. xiv.

Pycnocryptus corcyreus, Corfu, SCHMIEDEKNECHT, Ent. Nachr. xvi, p. 123, n. sp.

Pyraconon pectoralis, Austria, from larvæ of *Anthaxia quadripunctata* ; KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 484, n. sp.

Rhaestus punctatus, Sweden, THOMSON, p. 1533, Opusc. Ent. xiv, n. sp.

Rhyssa insignis, Russia, JAROCHEWSKY, Trudui Kharkoff Univ. xxiii, p. 369, n. sp.

↓ *Rhyssonota*, n. g., *Pimplides*, for *R. tristis*, n. sp., Brazil; KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 489.

Schizoloma confusa, S. Carolina, ASHMEAD, p. 426, P. U. S. Nat. Mus. xii, n. sp.

Sphécophaga vesparum, habits; BIGNELL, Ent. M. M. (2) i, p. 192.

Stilpnus texanus, N. America, ASHMEAD, p. 397, P. U. S. Nat. Mus. xii, n. sp.

Thalessa ? *histrio*, ♂ described; KRIECHBAUMER, Ann. Hofmuseum Wien, v, p. 487.

Thersilochus montanus, Colorado, ASHMEAD, p. 23, Bull. Col. Ass. i, n. sp.

Thyreodon texanus, N. America, ASHMEAD, p. 422, P. U. S. Nat. Mus. xii, n. sp.

Trematopygus ? *cultriformis*, Nebraska, ASHMEAD, p. 441, P. U. S. Nat. Mus. xii, n. sp.

Tryphonides: catalogue of 303 Belgian species, with descriptions of varieties and sexes; JACOBS & TOSQUINET, Ann. Ent. Belg. xxxiv, pp. 44 & 45.

Xylonomus rileyi, *pulcher*, Missouri, p. 450, *floridanus*, Florida, p. 451, ASHMEAD, P. U. S. Nat. Mus. xii, n. spp.

↓ *Zootrephus*, n. g., for *Bassus holmgreni* and *rufiventris*; THOMSON, p. 1486, Opusc. Ent. xiv.

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Adelura montana, *ampla*, Colorado, ASHMEAD, p. 19, Bull. Col. Ass. i, n. spp.

Apanteles leviceps, *monticola*, Colorado, ASHMEAD, p. 17, Bull. Col. Ass. i; *A. sarrothripæ*, *ornigis*, p. 6, *crambi*, p. 8, Illinois, WEED, Bull. Illin. Lab. N. H. iii: n. spp.

Aphidius granariaphis, N. America, COOK, Canad. Ent. xxii, p. 125; *A. montanus*, *atropetiolatus*, Colorado, ASHMEAD, p. 20, Bull. Col. Ass. i: n. spp.

Cenophanes atrata, Colorado, ASHMEAD, p. 16, Bull. Col. Ass. i, n. sp.

Chelonus atripes, p. 16, *aculeatus*, p. 17, Colorado, ASHMEAD, Bull. Col. Ass. i, n. spp.

Clinocentrus americanus, N. America, WEED, Bull. Illin. Lab. N. H. iii, p. 43, n. sp.

Cælinius nigripes, Colorado, ASHMEAD, p. 19, Bull. Col. Ass. i, n. sp.

Eubadizon basilare, N. America, PROVANCHER, Nat. Canad. xix, p. 248, n. sp.

Homophyla atricoxalis, Colorado, ASHMEAD, p. 18, Bull. Col. Ass. i, n. sp.

Hormius americanus, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 16, n. sp.

↓ *Microbracon*, n. g., for part of *Bracon*, with *M. sulcifrons*, n. sp., Colorado; ASHMEAD, p. 15, Bull. Col. Ass. i.

Microplitis mamestræ, N. America, WEED, Bull. Illin. Lab. N. H. iii, p. 2, n. sp.

Pentapleura alticola, Colorado, ASHMEAD, p. 18, Bull. Col. Ass. i, n. sp.

Fraon coloradensis, Colorado, ASHMEAD, p. 20, Bull. Col. Ass. i, n. sp.

Sigalphus curculionis and *canadensis*, notes on ; GILLETTE, Canad. Ent. xxii, p. 114.

Trachyusa americana, Colorado, ASHMEAD, p. 18, Bull. Col. Ass. i, n. sp.

EVANIIDÆ and TRIGONALIDÆ.

Gasteruption schlettereri, Damascus, MAGRETTI, Ann. Mus. Genov. (2) ix, p. 529, n. sp.

Trigonalys hahnii, Spin., note on ; JAROCHEWSKY, Trudui Kharkoff Univ. xxii, pp. 133-143.

CHALCIDIDÆ.

Some remarks on S. American *Chalcididæ* ; ASHMEAD, P. E. Soc. Wash. i, p. 218.

Axima zabriskei, New York, HOWARD, Ins. Life, ii, p. 366, woodcuts, n. sp.

Blastothrix yuccæ, California, COQUILLETT, West Am. Scientist, vii, p. 44, n. sp.

Dipara latipennis, Colorado, ASHMEAD, p. 26, Bull. Col. Ass. i, n. sp.

Encyrtus fuscicollis, larval history and anatomy ; BUGNION (100).

Entedon amyclas reared from *Nepticula gei* ; DALE, Ent. M. M. (2) i, p. 162.

Euryischia lestophoni noticed and figured ; KOEBELE, Rep. Bull. xxi, p. 17.

Eurytoma bigeloviæ, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 25, n. sp.

Habrocytus obscuripes, Colorado, ASHMEAD, p. 27, Bull. Col. Ass. i, n. sp.

Halidea schwarzi, Virginia, ASHMEAD, P. E. Soc. Wash. i, p. 265, n. sp.

Homalotylus bifasiatus, Colorado, ASHMEAD, p. 28, Bull. Col. Ass. i, n. sp.

Hoplocrepis, n. g. (*Eulophinæ* or *Elachistinæ*), p. 235, for *H. albiclavus*, n. sp., Florida, p. 236 ; ASHMEAD, P. E. Soc. Wash. i.

Isosoma orchidearum in N. America ; Ins. Life, ii, p. 250.

Leucospis: monograph of ; SCHLETTERER (736).

L. tricarinata, W. Africa, p. 221, *procera*, Java, p. 228, *malaica*, p. 230, *micrura*, p. 231, Amboyna, *morawitzi*, Australia, p. 237, *amaurop-tera*, Celebes, p. 242, *macrodon*, Malay Archipelago, p. 244, *funerea*, Amboyna, p. 247, *rileyi*, Mexico, p. 254, *latifrons*, Yucatan, p. 259, *distinguenda*, p. 269, *propinqua*, p. 277, Brazil, SCHLETTERER, B. E. Z. xxxv, n. spp.

Megastigmus nigrovariegatus, Colorado, ASHMEAD, p. 26, Bull. Col. Ass. i, n. sp.

Monodontomerus montivagus, Colorado, ASHMEAD, p. 25, Bull. Col. Ass. i, n. sp.

↓ *Ophelosia*, n. g. near *Dilophogaster*, for *O. crawfordi*, n. sp., S. Australia, on *Icerya*; RILEY, *Ins. Life*, ii, p. 249, woodcut.

Polistomorpha: described and treated as distinct genus; SCHLETTERER, B. E. Z. xxxv, pp. 292–298.

Rhopalicus coloradensis, Colorado, ASHMEAD, p. 27, Bull. Col. Ass. i, n. sp.

Stibula montana, Colorado, ASHMEAD, p. 24, Bull. Col. Ass. i, n. sp.

Syntomaspis lazulella, Colorado, ASHMEAD, p. 26, Bull. Col. Ass. i, n. sp.

↓ *Tanaostigma*, n. g., near *Tetracnemus*, p. 147, for *T. coursetiæ*, Mexico, n. sp., p. 148, woodcut; HOWARD, *Ins. Life*, iii.

Torymus rudbeckiæ, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 26, n. sp.

PROCTOTRUPIDÆ.

↓ *Acoloides*, n. g. (*Scelionine*), p. 269, for *A. saitidis*, n. sp., N. America, p. 270; HOWARD, *Ins. Life*, ii.

Beus americanus, N. America, HOWARD, *Ins. Life*, ii, p. 270 (*cf. t. c.* p. 359, where this is said to be *Trichasius clavatus*, Prov.), n. sp.

↓ *Belyta zetterstedtii*, n. n. for *affinis*, Zett.; DALLA TORRE, *Wien. ent. Z.* ix, p. 97.

B. monilicornis, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 12, n. sp.

↓ *Betyla*, n. g., *Belytidæ*, p. 12, for *B. fulva*, n. sp., New Zealand, p. 13, CAMERON, *Mem. Soc. Manch.* (4) ii.

Callirrhysis försteri, n. n. for *hartigii*, Först.; DALLA TORRE, *Wien. ent. Z.* ix, p. 97.

Ceraphron ultimus, n. n. for *tenuicornis*, Thoms.; *thomsoni*, n. n. for *flavipes*, Thoms.; DALLA TORRE, *Wien. ent. Z.* ix, p. 97.

Cosmocoma howardi, n. n. for *elegans*, How.; DALLA TORRE, *Wien. ent. Z.* ix, p. 97.

Diapria walkeri, n. n. for *apicalis*, Wlk.; *motschulskyi*, n. n. for *longicornis*, Motsch.; *taprobanica*, n. n. for *nigricornis*, Motsch.; DALLA TORRE, *Wien. ent. Z.* ix, p. 97.

Ectadius pallipes, p. 9, *nigrifemur*, p. 10, Colorado, ASHMEAD, Bull. Col. Ass. i, n. spp.

Epyris brevipennis, Gibraltar, CAMERON, *Mem. Soc. Manch.* (4) ii, p. 11;

E. monticola, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 8: n. spp.

Ismarus atropetiolatus, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 11, n. sp.

↓ *Isocybus nigriclavus*, Colorado, ASHMEAD, p. 10, Bull. Col. Ass. i, n. sp.

↓ *Malvina*, n. g. (*Belytidæ*), for *M. punctata*, n. sp., New Zealand; CAMERON, p. 13, *Mem. Soc. Manch.* (4) ii.

Miota glabra, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 12, n. sp.

Monocrita nigripes, Colorado, ASHMEAD, p. 9, Bull. Col. Ass. i, n. sp.

Platygaster intricator, development of; KULAGIN (460).

- Psilomma coloradense*, Colorado, ASHMEAD, p. 11, Bull. Col. Ass. i, n. sp.
Synopeas inermis, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 10, n. sp.
Zelotypa coloradensis, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 12,
 n. sp.

CYNIPIDÆ.

The British parasitic *Cynipidæ* monographed ; CAMERON (109).

- Acraspis niger*, N. America, GILLETTE, Ent. Am. vi, p. 23 ; *A. macrocarpa*, p. 84, *politus*, p. 85, N. America, BASSETT, Tr. Am. Ent. Soc. xxvii :
 n. spp.

Ægilips, note on its characters and position ; CAMERON, p. 54, Mem. Soc. Manch. (4) ii.

- Allotria dolichocera*, Britain, p. 56, *collina*, *flicornis*, p. 57, *perplexa*, p. 58, *crassa*, p. 59, Scotland, CAMERON, Mem. Soc. Manch. (4) ii ; *A. megaptera*, Scotland, CAMERON, Mon. Brit. Phyt. Hym. iii, p. 239, pl. xv, fig. 7 : n. spp.

Amphibolips caroliniensis, p. 85, *palmeri*, p. 86, N. America, BASSETT, Tr. Am. Ent. Soc. xvii, n. spp.

- Andricus (Callirhytis) pulchra*, p. 73, *pusulatoides*, *reticulata*, p. 74, *ruginosus*, p. 75, *saccularius*, *seminosus*, p. 76, *pilula*, p. 77, N. America, *A. ? mexicana*, Guadalajara, p. 78, *A. (Callirhytis) clarkei*, p. 79, *A. speciosus*, *A. ? indistinctus*, p. 81, *howertoni*, p. 82, *maxwelli*, p. 83, N. America, BASSETT, Tr. Am. Ent. Soc. xvii, n. spp.

Aulax hieracii var. = (*graminis*, Cam.) ; *A. papaveris* var. = (*minor*, Htg.) ; CAMERON, Ent. M. M. (2) i, p. 313.

A. podagræ, p. 91, *tumidus*, p. 92, N. America, BASSETT, Tr. Am. Ent. Soc. xvii, n. spp.

Cynips ramuli, rearing the sexes of ; AURIVILLIUS, Ent. Tidskr. xi, p. 100.

- Diastrophus (?) aphidivorus*, England, CAMERON, p. 67, Mem. Soc. Manch. (4) ii ; *D. fusiformans*, Colorado, ASHMEAD, p. 13, Bull. Col. Ass. i : n. spp.

Dryophanta liberacellulæ, N. America, GILLETTE, Ent. Am. vi, p. 24 ; *D. clarkei*, *pumiliventris*, p. 69, *eburneus*, p. 70, *similis*, *corrugis*, p. 71, *pedunculata*, p. 72, N. America, BASSETT, Tr. Am. Ent. Soc. xvii : n. spp.

Eucoila scotica, p. 65, *fortinervis*, p. 66, *proxima*, p. 67, Britain, CAMERON, Mem. Soc. Manch. (4) ii ; *E. rufiventris*, Trinidad, p. 68, *claripennis*, *mexicana*, p. 14, *marginicollis*, Mexico, p. 15, CAMERON, Mem. Soc. Manch. (4) ii : n. spp.

Figites coloradensis, West Cliff, ASHMEAD, Bull. Col. Ass. i, p. 13, n. sp. *Gronotoma gracilicornis*, Mexico, CAMERON, Mem. Soc. Manch. (4) ii, p. 15, n. sp.

Holcaspis duricoraria, p. 64, *corallinus*, *canescens*, p. 66, *sileri*, p. 67, *pernicius*, p. 68, N. America, BASSETT, Tr. Am. Ent. Soc. xvii, n. spp.

Kleditoma longipennis, p. 59, *elegans*, *truncata*, p. 60, Scotland, *marshalli*, p. 61, *flicornis*, *longicornis*, p. 62, *gracilicornis*, p. 63, England, *affinis*, Scotland, p. 64, CAMERON, Mem. Soc. Manch. (4) ii, n. spp.

Neuroterus flavipes, p. 21, *vernus*, p. 22, N. America, GILLETTE, Ent. Am. vi ; *N. favosus*, p. 87, *pallidus*, p. 88, *pallipes*, *politus*, p. 89, *howertoni*, p. 90, N. America, BASSETT, Tr. Am. Ent. Soc. xvii : n. spp.

Rhodites multispinosa, N. America, GILLETTE, Ent. Am. vi, p. 25 ; *R. rosæfolii*, p. 13, *fusiformans*, p. 14, ASHMEAD, Bull. Col. Ass. i ; *R. lenticularis*, p. 59, *tumidus*, p. 60, *variabilis*, p. 61, *utahensis*, p. 62, *nebulosus*, p. 63, N. America, BASSETT, Tr. Am. Ent. Soc. xvii : n. spp.

Trybliographa crassicornis, Scotland, CAMERON, Mem. Soc. Manch. (4) ii, p. 64, n. sp.

SESSILIVENTRES.

[Cf. ASHMEAD (13), BERLESE (49), CAMERON (109), COBELLI (133), COSTA (147), ECKSTEIN (209), FROGGATT (286, 287), KONOW (439, 440, 441), MAGRETTI (504), RADOSZKOWSKI (629), SCUDDER (754).]

Catalogue and classification of the *Tenthredinidæ* of Europe ; KONOW (439).

The British *Cephidæ*, *Siricidæ*, and *Oryssidæ* monographed ; CAMERON (109).

Allantus lederi, p. 10, *discolor*, Caucasus, *bonensis*, Algeria, p. 11, KONOW, Wien. ent. Z. ix ; *A. violaceipennis*, Armenia, COSTA, Rend. Acc. Nap. (2) iv, p. 174 : n. spp.

Amauronematus, n. g., for *Nematus fallax* and allies ; KONOW, Deutsche e. Z. 1890, p. 237.

Arge soror, Europe, KONOW, Wien. ent. Z. ix, p. 8, n. sp.

Blennocampa lugubripennis, *candidipes*, Greece, COSTA, Rend. Acc. Nap. (2) iv, p. 173, n. spp.

Cephus pygmaeus, note on ; HARRINGTON, Ins. Life, ii, p. 286.

Cimbex americana, metamorphoses ; WEBSTER, Ins. Life, ii, pp. 227-230, woodcuts.

Cladius isomera, Har., larva described ; MURTFELDT, p. 78, Bull. Dep. Agric. Ent. xxii.

Dineura pallida, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 15, n. sp.

Dolerus unicolor, ♀ = (*arvensis*, Say) ; GILLETTE, Ent. News, i, p. 94.

D. rosti, Austria, *croaticus*, Croatia, *analis*, Carinthia, p. 9, *corruscans*, Europe, p. 10, KONOW, Wien. ent. Z. ix, n. spp.

Emphytus tener, habits ; ANDRÉ & LESNE, p. cvi, Bull. Soc. Ent. Fr. 1890.

E. leucostomus, Greece, COSTA, Rend. Acc. Nap. (2) iv, p. 172, n. sp.

↓ *Encarsioneura*, n. g., for *Mucrophya sturmi* ; KONOW, Deutsche e. Z. 1890, p. 240.

Eriocampa alabastripes, Greece, COSTA, Rend. Acc. Nap. (2) iv, p. 173, n. sp.

↓ *Eriocampoides*, n. g., for part of *Eriocampa* ; KONOW, Deutsche e. Z. 1890, p. 239.

Harpiphorus maculatus, Nort., note on ; HARRINGTON, Ins. Life, ii, p. 227. *H. varianus*, Nort., note on characters and metamorphoses ; RILEY & HOWARD, Ins. Life, ii, pp. 239-243, woodcuts.

- ✓ *Holcocneme*, n. g., near *Cræsus*; KONOW, Deutsche e. Z. 1890, p. 238.
- Hylotoma schmiedeknechtii*, Greece, COSTA, Rend. Acc. Nap. (2) iv, p. 172; *H. cyanura*, Armenia, COSTA, t. c. p. 174; *H. anceps, assimilis*, Korea, RADOSZKOWSKI, p. 232, Hor. Ent. Ross. xxiv: n. spp.
- ✓ *Laurentia*, n. g., for *L. craverii*, n. sp., Piedmont; COSTA, Rend. Acc. Nap. (2) iv, p. 173.
- ✓ *Loderus*, n. g., near *Dolerus*; KONOW, Deutsche e. Z. 1890, p. 240.
- Lyda pratensis*, observations on the life-history and metamorphoses; ECKSTEIN (209).
- ✓ *Lygæonematus*, n. g., for part of *Nematus*; KONOW, Deutsche e. Z. 1890, p. 238.
- Macrophya bertolinii*, Valle di Fiemme, COBELLI, Verh. z.-b. Wien, xl, p. 159, n. sp.
- Mesa salicis*, Colorado, ASHMEAD, Bull. Col. Ass. i, p. 15, n. sp.
- ✓ *Micronematus*, n. g., for part of *Nematus*; KONOW, Deutsche e. Z. 1890, p. 239.
- Monostegia ignota*, notes on; MALLY, Ins. Life, iii, pp. 9-12.
- Nematus hololeucopus, biannulatus, filicornis*, Greece, COSTA, Rend. Acc. Nap. (2) iv, p. 172, n. spp.
- ✓ *Pachynematus*, n. g., for part of *Nematus*; KONOW, Deutsche e. Z. 1890, p. 238.
- Perga*, brief notes on life-histories of some species; FROGGATT, P. Linn. Soc. N.S.W. (2) v, pp. 283-288.
- P. chalybea*, S. Australia, FROGGATT, P. Linn. Soc. N.S.W. (2) v, p. 285, n. sp.
- Pontania*, Costa, characters of; KONOW, Deutsche e. Z. 1890, p. 237.
- ✓ *Philomastix*, n. g., near *Pterygophorus*, p. 487, for *P. nancarrowi*, p. 488, *glabra*, p. 489, n. spp., Australia; FROGGATT, P. Linn. Soc. N.S.W. (2) v.
- Pristiphora*, Latr., characters of; KONOW, Deutsche e. Z. 1890, p. 238.
- Pseudodineura* = (*Pelmatopus*, Htg.); KONOW, Deutsche e. Z. 1890, p. 240.
- Pteronus*, Jur., characters of; KONOW, Deutsche e. Z. 1890, p. 237.
- Pterygophorus cinctus*, Kl., larvæ and habits; FROGGATT, P. Linn. Soc. N.S.W. (2) v, p. 654.
- Rhadinocera reitteri*, Austria, KONOW, Wien. ent. Z. ix, p. 8, n. sp.
- Sciapteryx soror*, Europe, KONOW, Wien. ent. Z. ix, p. 12, n. sp.
- ✓ *Scolioneura*, n. g., for part of *Blennocampa*; KONOW, Deutsche e. Z. 1890, p. 239.
- Tenthredopsis*: tabulation of the species, with synonymical notes, descriptions of varieties, catalogue of the species, based on an examination of the male characters; KONOW, Rev. d'Ent. ix, pp. 63-80.
- Tenthredopsis parvula*, Germany, *austriaca*, Austria, p. 72, *ornatrix, festiva*, Caucasus, p. 73, *arrogans*, Hungary, *dubia*, Germany, p. 74, *fene-strata*, Europe, *franki*, Thuringia, *puncticollis*, S. France, p. 76, *discrepans*, Caucasus, p. 77, KONOW, Rev. d'Ent. ix, n. spp.

(c.) *LEPIDOPTERA.*

External anatomy of pupa ; POULTON (619).—Marks of sex in pupa ; JACKSON (391).—Development in pupa of ♀ sexual organs ; *id.* (392).—Larval spines and bristles ; PACKARD (590).—Preservation of larvæ, with their colours ; CROSA (156).—Silk-producing structures ; GILSON (311).—The British Macro-*Lepidoptera* that hibernate in the perfect state ; JORDAN, Ent. M. M. (2) i, pp. 185–189.

RHOPALOCERA.

[*Cf.* BEHR (42), BETHAM (50), BRAMSON (78), CROWLEY (157), DAVIDSON & ATTEN (162), DIXEY (176), DRUCE (187, 188, 189), EDWARDS (213, 214, 215, 216, 217), FRITZE (284), GLASER (313) GODMAN & SALVIN (317, 405), GRAESER (322), GROUM-GRSHIMAÏLO (712), HAHNEL (343), HOFMANN (370), HOLLAND (372, 373), HONRATH (375), KIRBY (431), KRULIKOVSKY (459), LEECH (477, 478), LUCAS (494), MABILLE (476, 496, 501), MABILLE & VUILLOT (502), MANDERS (505), MISKIN (544, 545, 546), MOORE (551), MÖSCHLER (558), NICÉVILLE (565, 566, 567, 568), OBERTHUR (575, 576), OLLIFF (582), PAGENSTECHER (593), RÄTZER (641), RIBBE (681), RIPPON (697), SCHAU (730), SCUDDER (755, 762), SEITZ (766, 767), SEMPER (772), SENNA (775), SHARPE (782, 783, 784, 785, 786, 405), SKINNER, (789, 790), SMITH (798, 799, 800, 801), SMITH & KIRBY (802), SNELLEN (819, 820, 822, 823, 824), SPULER (826), SWINHOE (839, 840), WACKERZAPP (871), WALKER (873), WEYMER (909), WEYMER & MAASSEN (911).]

Fossil butterflies, with list of known species ; SCUDDER (755).

PAPILIONIDÆ.

Hypermnestra helios, var. described ; GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 141.

Ornithoptera haliphron, var. *bauermanni*, larva and pupa noticed, pp. 37 & 38 ; *priamus*, var. *aruana*, p. 40, *cræsus*, larva and pupa figured, pl. i, figs. 1–3 ; RIBBE, Deutsche e. Z., Lep. iii. *O. pompeus*, n. var. *holzi* ; PAGENSTECHER, JB. nass. Ver. xliii, p. 108. *O. (Priamusptera) urvillianana*, *cræsus*, *O. (Pompeusptera) hippolytus*, *O. richmondia*, *O. (Pompeoptera) plateni*, *O. (Trogonoptera) brookeana*, figured and described ; RIPPON, Icones Ornithopt.

Papilio : the arrangement of the species and the sexual characters discussed ; GODMAN & SALVIN, Biol. Centr. Am. Rhop. ii, pp. 188–190. The following insects are figured in the same vol., besides many details of sexual characters, viz. :—*P. childrenæ*, pl. lxv, fig. 1, *sadyattes*, fig. 4, *alopius*, figs. 10 & 11, *numitor*, pl. lxvi, figs. 1–3, *copanæ*, figs. 4–6, *corbis*,

figs. 7 & 8, *orsua*, figs. 9 & 10, *belesis*, pl. lxvii, figs. 3 & 4, *guaco*, fig. 1, *eridamas*, fig. 10, *orabilis*, fig. 14, *lacandones*, figs. 11 & 12, *salvini*, pl. lxviii, fig. 3, *calliste*, figs. 1 & 2, *neosilaus*, figs. 8 & 9, *xanticles*, figs. 10 & 11, *fenochionis*, figs. 13 & 14, *pallas*, pl. lxix, figs. 5 & 6, *ornythion*, figs. 7 & 8, *pandion*, pl. lxx, figs. 6 & 7, *rogeri*, figs. 8 & 9, *birchalli*, pl. lxxi, figs. 8 & 9, *electryon*, pl. lxxii, figs. 1 & 2, *syedra*, figs. 4 & 5. *P. ariel*, SMITH & KIRBY, Rhop. ex. Papilio, vii, *laarchus*, *op. cit.* viii, *prospero*, *op. cit.* ix, figured. *P. humbloti*, pl. i, figs. 1 & 2, *echeroides*, Trim., pl. ii, fig. 6, figured; OBERTHUR, Études d'Ent. xiii. *P. pilumnus* figured; EDWARDS, Butt. N. Am., 3rd ser.; Papilio, ii. *P. doson*, figs. 2 & 2a, *nomius*, figs. 1 & 1a, pl. e, p. 364, *liomedon*, pl. d, figs. 1-3, p. 367, larvæ and pupæ figured; DAVIDSON & AITKEN, J. Bomb. Soc. v. *P. oxynius*, larva described; GUNDLACH, B. E. Z. xxxv, p. 131. *P. machaon*, var. *burdigalensis*, noticed; BREIGNET, Bull. Soc. Ent. Fr. 1890, p. cxliii. *P. podalirius*, n. var. *podalirinus*, p. 37, pl. ix, fig. 99; OBERTHUR, Études d'Ent. xiii. *P. peranthus*, n. var. *intermedius*; SNELLEN, p. 275, Tijdschr. Ent. xxxiii.

P. levassori, Comoro Is., OBERTHUR, p. 10, pl. ii, fig. 5, Études d'Ent. xiii; *P. harpagon*, Gaboon, SMITH, Ann. N. H. (6) v, p. 224; *P. sisenna*, Mozambique, MABILLE, p. 29, Ann. Soc. Ent. Fr. (6) x; *P. van de polli*, Java, SNELLEN, Tijdschr. Ent. xxxiii, p. 22; *P. neumogeni*, Sumbawa, HONRATH, Ent. Nachr. xvi, p. 127; *P. sciron*, China, LEECH, Ent. xxiii, p. 192; *P. plinius*, Peru, WEYMER, in Stübel Reise, p. 125, pl. i, fig. 1; *P. mycale*, Panama, Colombia, p. 199, pl. lxv, figs. 12 & 13, *procas*, Mexico, figs. 15 & 16, p. 203, *belephantes*, Mexico and Honduras, pl. lxvii, fig. 16, p. 208, *phurax*, Brit. Honduras, fig. 8, p. 211, *epidaurus*, Centr. America, pl. lxix, figs. 1 & 2, p. 224, *tolus*, Mexico, pl. lxx, figs. 1-4, p. 228, *tolmides*, Panama, fig. 5, p. 229, *phanostratus*, *polycharmus*, pl. lxx, fig. 10, Mexico, p. 232, *zalates*, pl. lxx, figs. 1 & 2, p. 233, *cephalus*, figs. 4 & 5, p. 235, Panama, GODMAN & SALVIN, Biol. Centr. Am. Rhop. ii : n. spp.

Parnassius: the distribution and origin of the Asiatic species, the nature of the ♀ pouch, some pouches figured, pl. A, the characters of species and varieties discussed, pp. 142-213; the following figured—*princeps*, Gr.-Gr., pl. i, fig. 2a, b, *romanovi*, Gr.-Gr., fig. 1a-c, *charltonius*, pl. ii, fig. 1a-c, *delphius*, varr. *cardinal*, fig. 2a-d, *hunza*, pl. x, fig. 1a, b, *simo*, pl. xxi, fig. 3a-c; GROUM-GRSHIMAILO, in Rom. Mem. iv. *P. delius*, variation noticed; RÄTZER, MT. Schw. ent. Ges. viii, p. 223. *P. delphius*, n. var. *stenosemus*; HONRATH, Ent. Nachr. xvi, p. 127. *P. felderi*, n. var. *atrata*; GRÆSER, B. E. Z. xxxv, p. 71. *P. smintheus*, n. var. *nanus*; NEUMOEGEN, Ent. Am. vi, p. 61.

**Trogonoptera*, n. subg. of *Ornithoptera*; RIPPON, Icones Ornithopt.

PIERIDÆ.

Aporia procris, China, LEECH, Ent. xxiii, p. 191, n. sp.

Appias olferna, p. 358, E. India, *irvinii*, p. 359, Burma, *retexta*, p. 360, Bombay, SWINHOE, Ann. N. H. (6) v, n. spp.

Belenois sylvander, Central Africa, SMITH, P. Z. S. 1890, p. 464, n. sp.

Callosune alberta, E. India, SWINHOE, Ann. N. H. (6) v, p. 356, n. sp.

Catopsilia pyranthe, noticed, p. 121 ; *C. philea*, &c., habits noticed, p. 95 ; SEITZ, S. E. Z. li. *C. rhadia*, Bdv., ♂ described ; MABILLE, p. 28, Ann. Soc. Ent. Fr. (6) x.

Colias : essay on the species, their varieties, classification, and distribution, GROUM-GRSHIMAÏLO, in Rom. Mem. iv, pp. 232-353 ; the following figured—*C. marcopolo*, pl. xi, figs. 1-3, *sieversii*, pl. iii, fig. 3, *eogene*, pl. v, fig. 1, *staudingeri*, var. *pamira*, pl. iv, fig. 2, *regia*, pl. v, fig. 3, *alpherakii*, pl. iii, fig. 2, *christophi*, pl. iv, fig. 1, *romanovi*, pl. v, fig. 2, *wiskotti*, var. *separata*, pl. iv, fig. 3 ; the following new varieties named and described—*C. erate* n. var. *hyaleoides*, p. 321, *sieversii* varr. *erythas*, *elissa*, *cana*, pp. 332 & 333, *thisoa* var. *aeolides*, p. 346, *wiskotti* var. *leuca*, p. 349, var. *leucotheme*, p. 351, var. *seres*, p. 353 ; GROUM-GRSHIMAÏLO, in Rom. Mem. iv. *C. euxanthe*, Feld., = (*Scalidoneura hermina*, Butl.), figured, pl. iii, fig. 17, noticed, p. 72 ; WEYMER, in Stübel Reise. *C. elis*, habits and variation ; BEAN, Canad. Ent. xxii, pp. 96-99. *C. erschoffi*, note on ; AUSTAUT, Le Nat. xii, p. 94. *C. palæno* n. var. *illneri* ; RÜHL, Soc. Ent. v, p. 89. *C. hyale*, var. figured ; RIBBE, Deutsche e. Z. Lep. iii, p. 45, pl. ii, fig. 1.

Delias diaphana, Semp., pl. xxxiv, figs. 3-6, *themis*, Hew., fig. 1, *hyparete*, varr., pl. xxxvi, larva, pupa, pl. B, fig. 8, *heningia*, varr., pl. xxxv, figured ; SEMPER, Reisen Philipp. ii, v.

D. patrua, China, LEECH, Ent. xxiii, p. 46 ; *D. baracasa*, p. 230, pl. xxxiv, fig. 2, *ottonia*, p. 235, figs. 7-9, Philippines, SEMPER, Reisen Philipp. ii, v : n. spp.

Dismorphia discoloria, Colombia, WEYMER, S. E. Z. li, p. 292, n. sp.

Elodina umbratica, figs. 1 & 2, *primularis*, figs. 6 & 7, *andropis*, figs. 8 & 9, *signata*, fig. 12, figured ; SMITH & KIRBY, Rhop. ex. Papilionidæ, Pierinæ, Elodina, i.

E. citrinaris, p. 1, New Britain, figs. 4 & 5, *argypheus*, Solomon Is., figs. 10 & 11, p. 3, SMITH & KIRBY, t. c., n. spp.

Enantia euryope, figs. 12 & 13, *oreas*, figs. 17 & 18, *deione*, figs. 5-7, figured, pl. lx (as *Leptalis*) ; Biol. Centr. Am. Rhop. ii.

Eucheira, Westw., = (*Neophasia*, Behr) ; BEHR, P. Cal. Ac. Sci. (2) ii, p. 92.

Euchloe cardamines, variation in Britain ; WEIR, P. S. Lond. E. Soc. 1888-9, p. 40.

Euterpe flisa, H.-S., referred to *Archonias*, synonymy noticed ; WEYMER, in Stübel Reise, p. 73.

Huphina boisduvaliana, pls. xxxvii, fig. 12, & xxxviii, fig. 1, n. var. *semperi*, pls. xxxvii, fig. 13, & xxxviii, fig. 2, n. var. *balbagona*, pls. xxxvii, figs. 14 & 15, & xxxviii, fig. 3, *olga*, pl. xxxvii, figs. 1-11, figured ; SEMPER, Reisen Philipp. ii, v.

H. liquida, E. India, SWINHOE, p. 361, Ann. N. H. (6) v, n. sp.

Ixias alana, E. India, *lena*, Andaman Is., SWINHOE, p. 357, Ann. N. H. (6) v, n. spp.

- Leucophasia gigantea*, China, LEECH, Ent. xxiii, p. 45, n. sp.
Mathania esther, Peru, OBERTHUR, Bull. Soc. Ent. Fr. (6) x, p. xxi, n. sp.
Mylothris subfusa, Cameroons, CROWLEY, Tr. E. Soc. 1890, p. 551, pl. xviii, figs. 3 & 4, n. sp.
Phulia nymphula, n. var. *illimani*; WEYMER, in Stübel Reise, p. 125, pl. iv, fig. 12.
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Satyrodes canthus (with var.), metamorphoses figured; EDWARDS, Butt. N. Am., 3rd ser., *Satyrodes*, i.

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Satyrus, i. *S. hermione*, L., coupling described; SENNA, Bull. Ent. Ital. xxii, p. 108.

S. leechi, p. 473, pl. xv, fig. 3a, b (as *huebneri*), *intermedius*, p. 480, pl. xv, fig. 7, Central Asia, GROUM-GRSHIMAILO in Rom. Mem. iv; *S. maculosa*, China, LEECH, Ent. xxiii, p. 30; *S. merlina*, pl. x, fig. 105, *sybillina*, fig. 106, China, OBERTHUR, p. 40, Études d'Ent. xiii: n. spp.

Theope eupolis, *bacenis*, Mexico, SCHAU, Ent. Am. vi, p. 19, n. spp.

Xenica orichra, Meyr., note on; OLLIFF, P. Linn. Soc. N.S.W. (2) iv, p. 620.

X. correæ, Mt. Kosciusko, OLLIFF, P. Linn. Soc. N.S.W. (2) iv, p. 621, n. sp.

Zethera sagitta, China, LEECH, Ent. xxiii, p. 26, n. sp.

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Dyctis dædalion, Burma, NICÉVILLE, p. 202, pl. d, fig. 4, J. Bomb. N. H. Soc. v, n. sp.

Elymnias caudata, larva and pupa figured; DAVIDSON & AITKEN, p. 268, pl. A, figs. 2 & 2a, J. Bomb. N. H. Soc. v.

E. chelensis, Khasi Hills, NICÉVILLE, p. 200, pl. d, fig. 3, J. Bomb. N. H. Soc. v, n. sp.

ERYCINIDÆ.

Anatole middletoni, Brazil, SHARPE, p. 574, pl. xlvi, figs. 8 & 9, P. Z. S. 1890, n. sp.

Bæotis johannæ, Brazil, SHARPE, p. 573, pl. xlvi, fig. 7, P. Z. S. 1890, n. sp.

Caria melicerta, Mexico, SCHAU, Ent. Am. vi, p. 18, n. sp.

Dichora, n. g., for *Libythea labdaca*, Westw.; SCUDDER, p. 470, Rep. U. S. Geol. Surv. viii, pt. i.

Diorhina arthuriana, Brazil, SHARPE, p. 572, pl. xlvi, figs. 4 & 5, P. Z. S. 1890, n. sp.

Dodona maculosa, China, LEECH, Ent. xxiii, p. 44, n. sp.

Eurybia halimede, n. var. *albiseriata*, WEYMER, in Stübel Reise, p. 88.

Hypatus: the genus maintained and defined; SCUDDER, p. 462, Rep. U. S. Geol. Surv. viii, pt. i.

Isapis falcis, Colombia, WEYMER, in Stübel Reise, p. 121, pl. iv, fig. 10, n. sp.

Lasaia sessilis, Mexico, SCHAU, Ent. Am. vi, p. 19, n. sp.

Libythea carinenta, habits noticed, SEITZ, S. E. Z. li, p. 2.

L. libera, Burma, NICÉVILLE, p. 207, pl. d, fig. 6, J. Bomb. N. H. Soc. v, n. sp.

Lymnas isabellæ, Brazil, SHARPE, p. 571, pl. xlvi, fig. 3, P. Z. S. 1890, n. sp.

Mesene clarissa, Brazil, SHARPE, p. 573, pl. xlvi, fig. 6, P. Z. S. 1890, n. sp.

Mesosemia bella, Brazil, SHARPE, p. 569, pl. xlv, fig. 2, P. Z. S. 1890, n. sp.

Nemeobius lucina, note on egg and young larvæ; CHAPMAN, Ent. M. M. (2) i, p. 243.

Polycæna tamerlana figured, pl. x, fig. 6, n. var. *temir* described, p. 420; GROUM-GRSHIMAÏLO, in Rem. Mem. iv.

Siseme pseudopallas, Peru, WEYMER, in Stübel Reise, p. 121, pl. iv, fig. 13, n. sp.

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Acesina aberrans figured, pl. xxv, figs. 142 & 143; NICÉVILLE, Butt. Ind. iii.

Allotinus multistrigatus, figs. 157 & 158, *nivalis*, fig. 159, pl. xxvi, figured; NICÉVILLE, Butt. Ind. iii.

A. similis, Cameroons, KIRBY, Ann. Nat. H. (6) vi, p. 262, n. sp.

Amblypodia anita figured, pl. xxvii, fig. 191; NICÉVILLE, Butt. Ind. iii.

A. ganessa, n. var. *seminigra*; LEECH, Ent. xxiii, p. 44.

A. angulata, China, LEECH, Ent. xxiii, p. 44; *A. horsfieldi*, p. 106, *amazona*, p. 107, Java, PAGENSTECHER, JB. nass. Ver. xliii; *A. eupolis*, p. 42, *cyronthe*, p. 43, Cape York, MISKIN, P. Linn. Soc. N.S.W. (2) v : n. spp.

Aphnæomorpha, n. g., for *Aphnæus orcas* and *hutchinsonii*, Trim.; NICÉVILLE, p. 347, Butt. Ind. iii.

Aphnæus rukma, fig. 145, pl. xxv, *sani*, fig. 146, *rukmini*, fig. 147, figured; NICÉVILLE, Butt. Ind. iii.

A. ilogo, p. 429, *argenteola*, *crustaria*, p. 430, *argyrocyclus*, p. 431, W. Africa, HOLLAND, Psyche, v; *A. chalybeatus*, Sierra Leone, SHARPE, Ann. N. H. (6) vi, p. 105, figured Tr. E. Soc. 1890, pl. xviii, fig. 7; *A. zaffra*, Himalaya, NICÉVILLE, p. 366, pl. xxviii, fig. 217, Butt. Ind. iii : n. spp.

† *Araotes* ("n. g.," but established by Doherty last year, cf. Zool. Rec. xxvi, Ins. p. 225), for *Myrina lapithis*, Moore, figured pl. xxix, fig. 237; NICÉVILLE, p. 446, Butt. Ind. iii.

A. perrhæbis, Philippines, SEMPER, p. 220, pl. xxxiii, fig. 21, Reisen Philipp. ii, v, n. sp.

Arhopala bicolora, Rüb., pl. xxxiii, fig. 18, *phænops*, Feld., fig. 16, *adatha*, Hew., fig. 17, figured; SEMPER, Reisen Philipp. ii, v.

A. staudingeri, p. 195, *trionæa*, p. 198, *anamuta*, p. 203, *davaona*, p. 204, Philippines, SEMPER, Reisen Philipp. ii, v; *A. viridissima*, Burma, SWINHOE, Ann. N. H. (6) v, p. 449; *A. adorea*, p. 238, frontispiece, fig. 139, *rafflesii*, p. 248, *agrata*, p. 251, fig. 137, *davisoni*, p. 280, fig. 135, E. India, NICÉVILLE, Butt. Ind. iii : n. spp.

† *Arrhenothrix*, n. g., p. 336, for *A. penicilligera*, n. sp., E. India, pl. xxviii, fig. 214, p. 337, NICÉVILLE, Butt. Ind. iii.

† *Aslauga*, n. g., for *A. marginalis*, n. sp., Sierra Leone; KIRBY, p. 261, Ann. N. H. (6) vi.

- Azanus gamra* figured, pl. xxvi, fig. 176, NICÉVILLE, Butt. Ind. iii.
- Bindahara areca*, Feld., pl. xxix, fig. 242, *thesmia*, fig. 229, figured; NICÉVILLE, Butt. Ind. iii. *B. scæva*, Hew., ♀ described and figured, p. 210, pl. E, fig. 7; *cinesoides*, Nic., ♀ figured and described, p. 211, pl. E, fig. 8; NICÉVILLE, J. Bomb. N. H. Soc. v.
- Camena ctesia* figured, pl. xxviii, fig. 215, NICÉVILLE, Butt. Ind. iii.
- Castalius airavati*, figured, frontispiece, fig. 133; NICÉVILLE, Butt. Ind. iii.
- C. monrosi*, Philippines, SEMPER, Reisen Philipp. ii, v, p. 187, pl. xxxiii, fig. 14, n. sp.
- Catapacilma gracilis*, figured, pl. xxxiii, figs. 19 & 20; SEMPER, Reisen Philipp. ii, v.
- Catochrysops pandava*, figs. 187 & 188, pl. xxvii, figured; NICÉVILLE, Butt. Ind. iii.
- C. vapanda*, Philippines, SEMPER, Reisen Philipp. ii, v, p. 187, pl. xxxiii, fig. 13, n. sp.
- Chatoprocta*, n. g., p. 311, for *Dipsas odata*, Hew., which is figured, pl. xxvii, fig. 204; NICÉVILLE, Butt. Ind. iii.
- C. odata*, Hew., eggs, larva, and habits noticed; NICÉVILLE, Tr. E. Soc. 1890, p. 87.
- Charana*, n. g., for *Myrina mandarinus*, Hew. (figured, pl. xxviii, fig. 222); NICÉVILLE, p. 401, Butt. Ind. iii.
- Cheritra jaffra*, figured, pl. xxix, fig. 226; NICÉVILLE, Butt. Ind. iii.
- C. ænea*, Philippines, SEMPER, Reisen Philipp. ii, v, p. 215, n. sp.
- Cheritrella truncipennis*, figured, pl. xxviii, fig. 223; NICÉVILLE, Butt. Ind. iii.
- Chilades laius*, figured, pl. xxvi, figs. 168 & 169; NICÉVILLE, Butt. Ind. iii.
- Chliaria kina*, figured, pl. xxviii, fig. 211; NICÉVILLE, Butt. Ind. iii.
- Chrysophanus aurifer*, synonymy and description; MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 31. *C. caspius* var. *transiens*, figured, pl. xxvii, fig. 206; NICÉVILLE, Butt. Ind. iii. *C. erinus*, figured, pl. xii; SCOTT, Austr. Lep. ii.
- C. mandersi*, Shan States, ELWES, Tr. E. Soc. 1890, p. 531; *C. susanus*, Biluchistan, NICÉVILLE, p. 322, Butt. Ind. iii; *C. ænea*, Queensland, MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 33 : n. spp.
- Curetis*, the species considered to be only two, p. 285, *C. phædrus*, figured, pl. xxvii, fig. 201; NICÉVILLE, Butt. Ind. iii.
- C. nicobarica*, Nicobar Is., SWINHÖE, Ann. N. H. (6) v, p. 451, n. sp.
- Cyaniris transpectus*, figured, pl. xxvi, figs. 170 & 171; NICÉVILLE, Butt. Ind. iii.
- C. cyanescens*, Nicobar Is., NICÉVILLE, p. 103, frontispiece, fig. 129, Butt. Ind. iii, n. sp.
- Danis syrius*, Queensland, MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 34, n. sp.
- Deudorix cærulea*, W. Africa, DRUCE, Ann. N. H. (6) v, p. 28, n. sp.

Dipsas minerva, p. 40, *comes*, *melpomene*, p. 41, *thespis*, p. 42, China, LEECH, Ent. xxiii, n. spp.

✓*Drina*, n. g., for *Myrina donina*, Hew. (figured, pl. xxix, fig. 235); NICÉVILLE, p. 442, Butt. Ind. iii.

Durbania gerda, Cameroons, KIRBY, p. 265, Ann. N. H. (6) vi; *D. mondo*, *oshera*, *ashira*, p. 428, *olombo*, p. 429, W. Africa, HOLLAND, Psyche, v : n. spp.

✓*Eooxylides*, n. g., for *Oxylides tharus*, Hb. (figured, pl. xxix, fig. 231); NICÉVILLE, p. 432, Butt. Ind. iii.

Epitola pinodes, W. Africa, DRUCE, Ann. N. H. (6) v, p. 24; *E. badura*, *staudingeri*, p. 271, *zelica*, *henleyi*, p. 272, *catuna*, *doleta*, p. 273, *perdita*, *E. ? barombiensis*, p. 274, Trop. Africa, KIRBY, op. cit. vi; *E. crowleyi*, Sierra Leone, SHARPE, t. c. p. 106, figured Tr. E. Soc. 1890, pl. xvii, figs. 6 & 7; *E. subfulvida*, p. 423, *purpurascens*, *goodi*, *cercenoides*, p. 424, *benitensis*, *umbratilis*, p. 425, W. Africa, HOLLAND, Psyche, v : n. spp.

Euaspa milionia, figured, pl. xxvii, fig. 203; NICÉVILLE, Butt. Ind. iii.

✓*Euliphyra*, n. g., for *E. mirifica*, n. sp., W. Africa, and *Liphyra leucyania*, Hew.; HOLLAND, p. 423, Psyche, v.

Everes argiades, figured, pl. xxvi, fig. 180; NICÉVILLE, Butt. Ind. iii.

E. kala, E. India, NICÉVILLE, p. 139, pl. xxvi, fig. 181, Butt. Ind. iii, n. sp.

Gerydus boisduvali, Moore, figured, pl. xxvi, fig. 155; NICÉVILLE, Butt. Ind. iii.

G. gopara, Perak, NICÉVILLE, Butt. Ind. iii, p. 25; ♀ described, p. 208, figured, pl. E, figs. 1 & 2, J. Bomb. Soc. v : n. sp.

Holochila assimilis, figured, pl. xii; SCOTT, Austr. Lep. ii.

H. androodus, Cape York, MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 41, n. sp.

Horaga rana, pl. xxv, fig. 149, *albimacula*, fig. 148, figured; NICÉVILLE, Butt. Ind. iii.

H. camiguina, *bilineata*, Philippines, SEMPER, Reisen Philipp. ii, v, p. 216, n. spp.

Hypolycæna nilgirica, figured, frontispiece, figs. 123 & 124; NICÉVILLE, Butt. Ind. iii. *H. tharrytas*, larva and pupa figured; SEMPER, pl. B, fig. 3, Reisen Philipp. ii, v.

H. liara, *kadiskos*, W. Africa, DRUCE, p. 27, Ann. N. H. (6) v, n. spp.

✓*Hypothecia*, n. g., for *Hypolycæna astyla*, Feld.; SEMPER, Reisen Philipp. ii, v, p. 204.

Ialmenus itonus, Cape York, MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 41, n. sp.

Ierda viridipunctata, Sikkim, NICÉVILLE, p. 329, pl. xxviii, fig. 207, Butt. Ind. iii, n. sp.

Iolaus menas, p. 29, *lukabas*, *paneperata*, *iaspis*, p. 30, W. Africa, DRUCE, Ann. N. H. (6) v; *I. luculentus*, p. 38, *contractus*, p. 39, China, LEECH, Ent. xxiii : n. spp.

Iraota timoleon figured, pl. xxvii, figs. 192 & 193; NICÉVILLE, Butt. Ind. iii. *I. lazarena*, Feld., figured; SEMPER, Reisen Philipp. ii, v, pl. xxxiii, fig. 15.

Jamides nicobaricus, figured, pl. xxvii, fig. 186 ; NICÉVILLE, Butt. Ind. iii.

Lachnocnema exiguus, W. Africa, HOLLAND, Psyche, v, p. 426, n. sp.

Lampides astraptēs, pl. xxxiii, figs. 5-7, *suidas*, figs. 11 & 12, *cleodius*, figs. 9 & 10, *celeno*, fig. 8, figured ; SEMPER, Reisen Philipp. ii, v. *L. alsulus*, figured ; SCOTT, pl. xii, Austr. Lep. *L. pura*, figured, frontispiece, p. 132 ; NICÉVILLE, Butt. Ind. iii.

L. marakata, Perak, NICÉVILLE, p. 174, Butt. Ind. iii, n. sp.

Larinopoda peucedā, figs. 5 & 6, *albula*, figs. 3 & 4, *eurema*, figs. 7 & 8, figured ; KIRBY & SMITH, Rhop. ex. *Lycenidæ* (African), pl. ix.

L. perfragilis, *campimus*, W. Africa, HOLLAND, p. 427, Psyche, v ; *L. sylpha*, *opaca*, Cameroons, KIRBY, p. 266, Ann. N. H. (6) vi ; *L. aspidos*, W. Africa, DRUCE, Ann. N. H. (6) v, p. 25 : n. spp.

Liptena alluaudi, W. Africa, MABILLE, p. 23, pl. ii, fig. 2, Ann. Soc. Ent. Fr. (6) x ; *L. acraeoides*, *fervida*, figs. 1-3, p. 39, *echo*, figs. 4 & 5, p. 40, W. Africa, SMITH & KIRBY, Rhop. ex. African *Lycenidæ*, pl. x : n. spp.

Logania marmorata, figured, frontispiece, fig. 128 ; NICÉVILLE, Butt. Ind. iii.

Lucia lucanus, synonymy and description ; MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 30.

Lycæna : GROUM-GRSHIMAILO, in Rom. Mem. iv, describes and discusses the Central-Asian species, pp. 366-419, and figures the following—*L. alaina*, pl. viii, fig. 7, *elvira* = (*oberthuri*, Gr.-Gr.), pl. vii, fig. 4, p. 369, *roxane*, pl. vii, fig. 3, *eversmanni*, pl. vii, fig. 2, *rutilans*, pl. vii, fig. 7, *iris*, fig. 8, *sieversi* var. *haberhaueri*, pl. vii, fig. 6, *bellona*, pl. xv, fig. 1, *devonica*, pl. viii, fig. 4, *panægides* var. *alaica*, pl. viii, fig. 8, *tengstroemi*, n. var. *carbonaria*, fig. 9, p. 388, *pheretes* var. *lehanus*, pl. x, fig. 4, *pherediades* var. *pheretulus*, pl. viii, fig. 5, *venus*, pl. viii, fig. 3, *magnifica*, pl. ix, fig. 1, *kogistana*, pl. viii, fig. 6, *phyllis* var. *phyllides*, pl. ix, fig. 6, *poseidon* var. *poseidonoides*, pl. ix, fig. 5, *kindermanni* var. *melania*, fig. 3, *actis* var. *actinides*, pl. ix, fig. 4, *dagmara*, pl. ix, fig. 2, *persephatta* var. *minuta*, pl. x, fig. 3, *chrysopsis* (as *omphissa*, Moore), pl. x, fig. 5, *charybdis*, pl. ix, fig. 7, *gigantea*, fig. 8, figured in Rom. Mem. iv. *L. bavius* var. *fatma*, figured, pl. vii, figs. 50 & 51, described, p. 19 ; OBERTHUR, Études d'Ent. xiii. *L. osias*, Rüb., synonymical note ; SNELLEN, p. 298, Tijdschr. Ent. xxxiii. *L. lineata*, Murray, ♂ described ; MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 35. *L. aratus* n. var. *djumpeanu* ; SNELLEN, p. 271, pl. xi, fig. 1, Tijdschr. Ent. xxxiii. *L. icarus* n. var. *casanensis* ; KRULIKOVSKI, Bull. Soc. Mosc. 1890, p. 223, pl. viii, fig. E. *L. loewii*, figured, pl. xxvi, fig. 167 ; NICÉVILLE, Butt. Ind. iii. *L. comyntas*, swarming of ; MARLATT, P. E. Soc. Wash. i, p. 206. *L. alexis*, coupling described ; SENNA, Bull. Ent. Ital. xxii, p. 110. *L. hylas*, hermaphrodite figured ; RIBBE, Deutsche e. Z. Lep. iii, p. 45, pl. ii, fig. 2.

L. moneta, p. 23, pl. ii, fig. 4, *fulvimagula*, fig. 5, *semilimbata*, fig. 3, *ornata*, fig. 6, p. 24, *podorina*, *serrula*, Senegal, p. 25, MABILLE, Ann. Soc. Ent. Fr. (6) x ; *L. phiala*, p. 366, pl. xxi, fig. 4, *dschagatai*, p. 370, *tomyris*,

p. 377, pl. vii, fig. 5, *hunza*, p. 397, pl. xv, fig. 2, GROUM-GRSHIMAÏLO, in Rom. Mem. iv ; *L. arcana*, *nebulosa*, China, LEECH, Ent. xxiii, p. 43 ; *L. canescens*, Tasmania, *mackayensis*, Mackay, p. 35, *nigra*, Cardwell, p. 36, *gracilis*, *sulpitius*, Queensland, p. 37, *mathewi*, Sidney, *hobartensis*, Tasmania, p. 38, MISKIN, P. Linn. Soc. N.S.W. (2) v ; *L. attenuata*, Queensland, LUCAS, *op. cit.* iv, p. 1066 ; *L. pelorias*, p. 121, pl. iv, fig. 2, *ludicra*, fig. 3, *titicaca*, fig. 6, p. 122, Bolivia, WEYMER, in Stübel Reise ; *L. patago*, Patagonia, MABILLE, N. Arch. Mus. (3) i, p. 144, pl. x, figs. 1 & 2 : n. spp.

Lycanesthes lycænina, figured, pl. xxvi, fig. 178 ; NICÉVILLE, Butt. Ind. iii.

L. lithas, W. Africa, DRUCE, Ann. N. H. (6) v, p. 24 ; *L. volta*, Africa, SHARPE, *op. cit.* vi, p. 105, figured, Tr. E. Soc. 1890, pl. xviii, fig. 6 ; *L. turneri*, Cape York, p. 39, *tasmanicus*, Tasmania, p. 40, MISKIN, P. Linn. Soc. N.S.W. (2) v : n. spp.

Makathala ameria, figured, pl. xxvii, fig. 200 ; NICÉVILLE, Butt. Ind. iii.

✓ *Maneca*, n. g., for *Pratapa bhotea*, Moore (figured, pl. xxviii, fig. 216) ; NICÉVILLE, p. 344, Butt. Ind. iii.

Megisba malaya, figured, pl. xxvi, fig. 165 ; NICÉVILLE, Butt. Ind. iii.

Mimacræa apicalis, p. 41, figs. 6 & 7, *charmian*, p. 42, figs. 8 & 9, Cameroons, SMITH & KIRBY, Rhop. ex. African *Lycænida*, pl. x, n. spp.

Mota, n. g., for *Myrina massyla*, Hew. (figured, pl. xxviii, fig. 210) ; NICÉVILLE, p. 345, Butt. Ind. iii.

Nacaduba pavana, fig. 182, *viola*, fig. 183, *cælestis*, fig. 184, pl. xxvi, *ardates*, fig. 185, pl. xxvii, figured ; NICÉVILLE, Butt. Ind. iii. *N. kerriana*, pl. xxxiii, fig. 3, *azureus*, figs. 1 & 2, figured ; SEMPER, Reisen Philipp. ii, v.

N. smaragdina, Philippines, SEMPER, Reisen Philipp. ii, v, p. 178, pl. xxxiii, fig. 4, n. sp.

✓ *Neolycæna*, n. g., for *Lycæna sinensis*, Alph. ; NICÉVILLE, p. 64, Butt. Ind. iii.

Neopithecops zalmora, Butl., figured, pl. xxvi, fig. 162 ; NICÉVILLE, Butt. Ind. iii.

Niphanda cymbia, figured, frontispiece, figs. 130 & 131 ; NICÉVILLE, Butt. Ind. iii.

Ogyris : revision of the Australian species ; MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 23.

O. barnardi, Queensland, MISKIN, P. Linn. Soc. N.S.W. (2) v, p. 27, n. sp.

✓ *Orthomiella*, n. g., p. 125, for *Chilades ? pontis*, Elwes (figured, pl. xxvi, fig. 177) ; NICÉVILLE Butt. Ind. iii.

Paragerydus horsfieldi, figured, pl. xxvi, fig. 156 ; NICÉVILLE, Butt. Ind. iii.

Phytala elais, Db., ♀ described ; HOLLAND, p. 425, Psyche, v.

Pithecops hylax, figured, pl. xxvi, fig. 161 ; NICÉVILLE, Butt. Ind. iii.

P. steirema, Solomon Is., DRUCE, Ann. N. H. (6) v, p. 25, n. sp.

Polyommatus solskyi var. *fulminans*, pl. vi, fig. 4, *alpherakii*, pl. xiv, fig. 2, *sultan*, pl. vi, fig. 6, *sarthus*, pl. vi, fig. 5, *dimorphus*, pl. vi, fig. 7, figured; GROUM-GRSHIMAILO, in Rom. Mem. iv.

Poritia pleurata, figured, pl. xxvi, fig. 160; NICÉVILLE, Butt. Ind. iii.

Pratapa plateni, p. 206, *P. ? manata*, p. 208, Philippines, SEMPER, Reisen Philipp. ii, v, n. spp.

Pseudaletis trifasciata, Sierra Leone, SHARPE, Ann. N. H. (6) vi, p. 103; figured, Tr. E. Soc. 1890, pl. xviii, fig. 8 : n. sp.

Pseuderesia helena, figured; SMITH & KIRBY, Rhop. ex. African *Lycænida*, pl. ix, figs. 1 & 2.

P. zoraida, W. Africa, SMITH & KIRBY, Rhop. ex. African *Lycænida*, figs. 9-12, p. 36; *P. o-rubrum*, p. 425, *latruncularia*, *despecta*, p. 426, W. Africa, HOLLAND, Psyche, v. *P. cellularis*, p. 262, *paucipunctata*, *turbata*, p. 263, *similis*, *debora*, p. 264, *dinora*, p. 265, Cameroons, KIRBY, Ann. N. H. (6) vi, : n. spp.

Rapala deliochus, Hew., ♀ described, p. 212, figured, pl. E, fig. 6; NICÉVILLE, J. Bomb. N. H. Soc. v. *R. phranga*, Hew., pl. xxxiii, fig. 22, *alcetas*, figs. 23 & 24, figured, *alcetas* n. var. *alcetina*, p. 225; SEMPER, Reisen Philipp. ii, v.

R. scintilla, Sikkim, NICÉVILLE, p. 461, Butt. Ind. iii, ♂ described, p. 212, figured, pl. E, fig. 5, J. Bomb. N. H. Soc. v; *R. repercussa*, *subpurpurea*, China, LEECH, Ent. xxiii, p. 42; *R. damona*, Andaman Is., SWINHOE, Ann. N. H. (6) v, p. 450; *R. nemana*, Philippines, SEMPER, p. 223, Reisen Philipp. ii, v : n. spp.

Ritra, n. g., for *Sithon aurea*, Druce; NICÉVILLE, p. 411, Butt. Ind. iii. *Satsuma chalybeia*, p. 43, *pratti*, p. 44, China, LEECH, Ent. xxiii, n. spp. *Sinthusia virgo*, figured, frontispiece, fig. 134; NICÉVILLE, Butt. Ind. iii. *Spalgis epius*, figured, pl. xxvi, fig. 163; NICÉVILLE, Butt. Ind. iii.

S. lemolea, p. 26, *pilos*, p. 27, W. Africa, DRUCE, Ann. N. H. (6) v; *S. s-signata*, W. Africa, HOLLAND, p. 426, Psyche, v; *S. latimarginata*, Senegambia, SHARPE, Ann. N. H. (6) vi, p. 347 : n. spp.

√*Suasa*, n. g., for *Myrina lisides*, Hew. (figured pl. xxviii, fig. 220); NICÉVILLE, p. 386, Butt. Ind. iii.

Surendra quercetorum figured, pl. xxvii, figs. 194 & 195, NICÉVILLE, Butt. Ind. iii.

Tajuria maculata, pl. xxviii, fig. 219, *donatana*, pl. xxv, fig. 154, *istroidea*, fig. 153, figured; NICÉVILLE, Butt. Ind. iii.

T. illurgioides, Sikkim, p. 375, pl. xxviii, fig. 218, NICÉVILLE, Butt. Ind. iii; *T. vergara*, Philippines, SEMPER, p. 210, Reisen Philipp. ii, v : n. spp.

Talicada nyseus, Guér., figured, pl. xxvi, fig. 179; NICÉVILLE, Butt. Ind. iii.

√*Taraka*, n. g., near *Spalgis*, p. 57, for *Miletus hamada*, Druce, and *T. mahametra*, n. sp., Perak, p. 59; NICÉVILLE, Butt. Ind. iii.

Tarucus venosus figured, pl. xxvii, fig. 189; NICÉVILLE, Butt. Ind. iii.

Teriomima leucostola, *xanthostola*, *xanthis*, W. Africa, HOLLAND, p. 429,

Psyche, v ; *T. decipiens*, p. 268, *delicatula*, *serena*, p. 269, *modesta*, *cordelia*, p. 270, *dubia*, p. 271, Trop. Africa, KIRBY, Ann. N. H. (6) vi : n. spp.

Thaduka multicaudata figured, pl. xxvii, fig. 196 ; NICÉVILLE, Butt. Ind. iii.

Thamala miniata figured, pl. xxviii, figs. 212 & 213 ; NICÉVILLE, Butt. Ind. iii.

Thecla: notes on habits of some Brazilian species ; SEITZ, S. E. Z. li, pp. 3-5. *T. sassanides* figured, pl. xxvii, p. 202 ; NICÉVILLE, Butt. Ind. iii. *T. w-album*, n. var. *butlerowi* ; KRULIKOVSKI, Bull. Soc. Mosc. 1890, p. 216. *T. rubi*, var. noticed ; BREIGNET, Bull. Soc. Ent. Fr. (6) x, p. xxix. *T. arata*, seasonal dimorphism in ; FRITZE, Zool. Anz. xiii, p. 13. *T. roboris*, metamorphoses ; CHRÉTIEN, Le Nat. xii, p. 102. *T. sassanides*, Koll., = (*mirabilis*, Ersch.) ; GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 354.

T. elvesi, p. 39, *ornata*, *rubicundula*, p. 40, *cælestis*, p. 191, China, LEECH, Ent. xxiii ; *T. ion*, *eronos*, *stiktos*, p. 151, *teleontes*, *stigmatos*, *cydonia*, *lemnos*, p. 152, Interior of Colombia, DRUCE, Ent. M. M. (2) i ; *T. oribata*, Bolivia, WEYMER, in Stübel Reise, p. 123, pl. iv, fig. 8 : n. spp.

Thestor fedtschenskoi, n. var., *alpina*, GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 357.

Ticherra acte, wet-season form figured, pl. xxviii, fig. 225 ; NICÉVILLE, Butt. Ind. iii.

Tingra lavinia, *laura*, p. 267, *fatima*, p. 268, Trop. Africa, KIRBY, Ann. N. H. (6) vi, n. spp.

↓ *Una*, n. g., for *Zizera* ? *usta*, Dist. ; NICÉVILLE, p. 51, Butt. Ind. iii.

Virachola isocrates, habits ; NICÉVILLE, Ind. Mus. Notes, i, p. 193.

↓ *Yasoda*, n. g., for *Loxura tripunctata*, Hew. (figured, pl. xxix, figs. 233 & 234) ; NICÉVILLE, p. 438, Butt. Ind. iii.

↓ *Zarona*, n. g., p. 34, with *Z. zanella*, Burma, p. 35, *bradamante*, Siam, p. 36, n. spp. ; NICÉVILLE, Butt. Ind. iii.

Z. pharygoides, Malay Penins., NICÉVILLE, p. 208, pl. E, fig. 3, J. Bomb. N. H. Soc. v, n. sp.

↓ *Zeltus*, n. g., for *P. etolus*, Fab. (figured, pl. xxviii, fig. 221) ; NICÉVILLE, p. 399, Butt. Ind. iii.

Zephyrus lhasia, E. India, NICÉVILLE, p. 301, Butt. Ind. iii : ♂ described, p. 210, pl. E, fig. 4, J. Bomb. N. H. Soc. v : n. sp.

Zeritis leonina, *fallax*, p. 104, *latifimbriata*, p. 105, Sierra Leone, SHARPE, Ann. N. H. (6) vi (figured, Tr. E. Soc. 1890, figs. 4-6, pl. xviii) : n. spp.

Zesius chrysomallus, figured, pl. xxviii, figs. 208 & 209 ; NICÉVILLE, Butt. Ind. iii.

↓ *Zinaspa*, n. g., for *Surendra todara* and *Rapala distorta* (pl. xxix, fig. 239) ; NICÉVILLE, p. 451, Butt. Ind. iii.

Zizera maha, fig. 172, *lysimon*, fig. 173, *gaika*, fig. 174, *otis*, fig. 175, figured, pl. xxvi ; NICÉVILLE, Butt. Ind. iii.

HESPERIIDÆ.

Abarattha ransonetti, larva and pupa figured, pl. F, figs. 1 & 1a, p. 374 ; DAVIDSON & AITKEN, J. Bomb. N. H. Soc. v.

√ *Æromachus*, n. g., for a part of *Thanaos* ; NICÉVILLE, p. 214, J. Bomb. N. H. Soc. v.

Antigonus jamesoni, Trop. Africa, SHARPE, Ann. N. H. (6) vi, p. 348, n. sp.

Baoris sikkima, E. India, SWINHOF, Ann. N. H. (6) v, p. 362, n. sp.

Carterocephalus biseriatus, Bolivia, WEYMER, in Stübel Reise, p. 128, pl. iv, fig. 7, n. sp.

Carystus evander, Sierra Leone, pl. iii, fig. 4, *thersander*, Mozambique, fig. 5, MABILLE, p. 30, Ann. Soc. Ent. Fr. (6) x, n. spp.

Celanorrhinus consertus, Khasi Hills, p. 222, pl. E, fig. 12, *cacus*, Rangoon, p. 223, fig. 11, NICÉVILLE, J. Bomb. N. H. Soc. v, n. spp.

√ *Ctenoptilum*, n. g. ; type, *Achlyodes vasava*, Moore, p. 220, with *C. multiguttata*, n. sp., Burma, p. 221, pl. E, fig. 10 ; NICÉVILLE, J. Bomb. N. H. Soc. v.

Cyclopides chinensis, p. 48, *nanus*, p. 49, China, LEECH, Ent. xxiii, n. spp.

Erycides urania described ; AARON, Ent. News, i, p. 23. *E. batabano*, Lef., metamorphoses ; DYAR, Canad. Ent. xxii, p. 211.

Eudamus hesus described ; AARON, Ent. News, i, p. 25. *E. stylites*, figs. 2 & 3, *undulatus*, figs. 4 & 5, *virescens*, figs. 6 & 7, pl., figured and described, pp. 11-15 ; MABILLE, Nov. Lep.

Halpe submacula, China, LEECH, Ent. xxiii, p. 48, n. sp.

Hesperia micacea, pl. iv, fig. 5, *fulvangua*, fig. 1, Ecuador, p. 126, *kirschii*, fig. 4, *biforis*, fig. 9, Colombia, p. 127, WEYMER, in Stübel Reise : n. spp.

Hesperilla munionga, p. 623, *monticolæ*, p. 624, Mount Kosciusko, OLLIFF, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Ismene brussauzi, Congo, MABILLE, p. ccxxi, Bull. Soc. Ent. Fr. 1890, n. sp.

Isoteinon iapis, Burma, NICÉVILLE, p. 213, pl. E, fig. 9, J. Bomb. N. H. Soc. v, n. sp.

Leucochitonea umvulensis, Trop. Africa, SHARPE, Ann. N. H. (6) vi, p. 348, n. sp.

Matapa aria, larva and pupa figured, pl. F, figs. 3 & 3a ; DAVIDSON & AITKEN, J. Bomb. N. H. Soc. v.

√ *Odontoptilum*, n. g. ; type, *Achlyodes sura*, Moore ; NICÉVILLE, p. 217 J. Bomb. N. H. Soc. v.

Pamphila rega, fig. 6, *heterochrus*, fig. 7, *xylos*, fig. 8, figured pl. 3 ; Ann. Soc. Ent. Fr. (6) x. *P. ormuzd* figured, pl. xviii, fig. 5 ; GROUM-GRSHIMAILLO, in Rom. Mem. iv. *P. panoquin*, early stages ; SKINNER, p. 8, Ent. News, i.

P. murga, Caffraria, MABILLE, p. 31, Ann. Soc. Ent. Fr. (6) x ; *P. virgata*, p. 47, *maga*, *similis*, p. 48, China, LEECH, Ent. xxiii ; *P. aaroni*, New Jersey, SKINNER, p. 6, Ent. News, i ; *P. slossonæ*, Florida, SKINNER, Ent. Am. vi, p. 138 : n. spp.

- Pardaleodes festus*, W. Africa, MABILLE, p. 33, pl. iii, fig. 2, Ann. Soc. Ent. Fr. (6) x, n. sp.
- Parnara astigmata*, Nilgiri Hills, SWINHOE, Ann. N. H. (6) v, p. 363 ;
- P. watsonii*, Upper Burma, NICÉVILLE, p. 223, J. Bomb. N. H. Soc. v : n. spp.
- Plesioneura proxima* figured, pl. iii, fig. 1 ; Ann. Soc. Ent. Fr. (6) x.
- P. grandis*, China, LEECH, Ent. xxiii, p. 47, n. sp.
- Proteides cappronieri*, Plötz, figured, pl. iii, fig. 3 ; noticed, p. 33 ; MABILLE, Ann. Soc. Ent. Fr. (6) x.
- P. shelleyi*, Trop. Africa, SHARPE, Ann. N. H. (6) vi, p. 349 ; *P. margaritata*, p. 155, *iricolor*, *laterculus*, p. 156, W. Africa, HOLLAND, Ent. News, i : n. spp.
- Pterogospidea diversa*, China, LEECH, Ent. xxiii, p. 46, n. sp.
- Pyrigus proteus* n. var. *prometheus*, p. 499, pl. xviii, fig. 1, *nobilis*, fig. 3, *antonia* var. *gigantea*, fig. 2, *alpina* n. var. *darwazica*, p. 502, pl. xxi, fig. 5, *poggei*, larva, fig. 4, *lutulentus*, pl. xxi, fig. 6, p. 504, figured and described ; GROUM-GRSHIMAILO, in Rom. Mem. iv. *P. spio*, L., figured, pl. iii, fig. 9 ; Ann. Soc. Ent. Fr. (6) x.
- Pyrrhopyge telassa*, Hew., varietal note ; WEYMER, in Stübel Reise, p. 64.
- Sapæa*, Plötz, note on its characters and composition ; MABILLE, p. 31, Ann. Soc. Ent. Fr. (6) x.
- S. elegantula*, *leucogaster*, Sierra Leone, MABILLE, p. 32, Ann. Soc. Ent. Fr. (6) x, n. spp.
- Suasus bipunctus*, Nilgiri Hills, SWINHOE, Ann. N. H. (6) v, p. 364, n. sp.
- Tagiades atticus*, larva and pupa figured, pl. f, figs. 5 & 5a, p. 373 ; DAVIDSON & AITKEN, J. Bomb. N. H. Soc. v.
- Teligonus lara*, Nicobar I., SWINHOE, Ann. N. H. (6) v, p. 365, n. sp.

HETEROCERA.

Correlation of large antennæ of male *Lepidoptera* with small powers of flight in ♀ ; ALPHÉRAKY (7).

SPHINGIDÆ.

[Cf. AUSTAUT (23), DRUCE (185), FRENCH (282), LEECH (477), OLLIFF (581), PACKARD (592), SCHAUS (730).]

Note on the larval ornamentation of the N. American *Sphingidæ* ; GROTE, Canad. Ent. xxii, p. 15.

Ampelophaga myron, life-history ; PACKARD, Psyche, v, p. 400.

Calliomma germen, Mexico, SCHAUS, Ent. Am. vi, p. 20, n. sp.

Cautethia grotei, Edw., noticed ; SKINNER, p. 52, Ent. News, i.

Cæquosa triangularis figured, pl. x ; SCOTT, Austr. Lep. ii.

Cressonia juglandis, n. var. *hyperbola* ; SLOSSON, Ent. Am. vi, p. 59.

Deidamia inscriptum, life-history ; PACKARD, Psyche, v. pp. 397-399.

Dilophonota edwardsii and *ello*, preparatory stages ; DYAR, Ent. Am. vi, pp. 141-146.

Enyo lugubris, synonymy discussed ; MÜSCHLER, Abh. Senck. Ges. xvi, p. 106.

Enyo tadium, p. 19, *riscus*, p. 20, Mexico, SCHAUS, Ent. Am. vi, n. spp.

Hemaris staudingeri, China, LEECH, Ent. xxiii, p. 81 ; *H. brucei*, Colorado, FRENCH, Canad. Ent. xxii, p. 134 : n. spp.

Macroglossa ducalis figured, pl. xviii, fig. 6, Rom. Mem. iv.

Macrosila edwardsi, Australia, OLLIFF, P. Linn. Soc. N.S.W. (2) v, p. 516, n. sp.

Oryba imperialis, Panama, DRUCE, Ann. N. H. (6) v, p. 213, n. sp.

Pergesa mexicana, Paso de San Juan, SCHAUS, Ent. Am. vi, p. 20, n. sp.

Smerinthus astylus, larva noticed ; JONES, Ent. News. i, p. 21.

S. kindermanni, n. var. *orbata* ; GROOM-GRSHIMAÏLO, in Rom. Mem. iv, p. 512.

S. atlanticus, with var. *æstivalis*, Marocco, AUSTAUT, Le Nat. xii, p. 190, n. sp.

ÆGERIIDÆ.

[*Cf.* BRANDT (79), FAILLA-TEDALDI (237), GROOM-GRSHIMAÏLO (712), MABILLE (496), OBERTHUR (575), SWINHOE (838).]

Ægeria rangoonensis, Burma, SWINHOE, Tr. E. Soc. 1890, p. 165, n. sp.

Melititia iridisquama, W. Africa, MABILLE, Ann. Soc. Ent. Fr. (6) x, p. 34 ; *M. notabilis*, p. 168, pl. vi, fig. 1, *pellecta*, fig. 2, *congruens*, fig. 4, p. 169, *M. (?) volatilis*, fig. 3, p. 170, Burma, SWINHOE, Tr. E. Soc. 1890 : n. spp.

Pramila minuta, Burma, SWINHOE, p. 171, pl. vi, fig. 5, Tr. E. Soc. 1890, n. sp.

Sciapteron noblei, p. 166, *jucunda*, p. 167, *gracilis*, p. 168, Burma, SWINHOE, Tr. E. Soc. 1890, n. spp.

Sesia ceiformis figured, pl. xviii, fig. 8, Rom. Mem. iv. *S. lahaye*, pl. viii, fig. 91, *euglossæformis*, fig. 90, *ceriæformis*, figs. 93 & 94, figured ; OBERTHUR, Études d'Ent. xiii.

S. staudingeri, Sicily, FAILLA-TEDALDI, Nat. Sicil. x, p. 28, pl. i, fig. 1 ; *S. flavida*, p. 24, pl. viii, fig. 95, *agnes*, p. 26, fig. 92, N. Africa, OBERTHUR, Études d'Ent. xiii ; *S. senilis*, Central Asia, GROOM-GRSHIMAÏLO, in Rom. Mem. iv, p. 515, pl. xviii, fig. 7 : n. spp.

CASTNIIDÆ, URANIIDÆ, AGARISTIDÆ, CHALCOSIIDÆ,

HIMANTOPTERIDÆ.

[*Cf.* DRUCE (186), ELWES (218, 219), LEECH (477), MABILLE (497, 498), MÜSCHLER (558), PAGENSTECHER (594), SCHAUS (730, 731), SNELLEN (824), SWINHOE (838), WEYMER & MAASSEN (911).]

Agarista noctuiformis, Portorico, MÜSCHLER, Abh. Senck. Ges. xvi, p. 112, n. sp.

Atossa nelsonna, synonymy, variation, and neuration noticed ; ELWES, P. Z. S. 1890, p. 380, pl. xxxiv, fig. 1.

A. moorei, pl. xxxiv, fig. 2, *nagaensis*, fig. 3, E. India, ELWES, p. 382, P. Z. S. 1890 ; *A. nelymna*, n. var. *chinensis*, LEECH, Ent. xxiii, p. 83, n. sp. (sic) : n. spp.

Campylotes histrionicus, variation, p. 383, n. var. *altissima*, p. 384, pl. xxxiii, fig. 1, *C. desgodinsi*, n. var. *splendida*, fig. 3, p. 384 ; ELWES, P. Z. S. 1890.

C. sikkimensis, E. India, ELWES, P. Z. S. 1890, p. 384, pl. xxxiii, fig. 3 ; *C. pratti*, China, LEECH, Ent. xxiii, p. 109 : n. spp.

Castniidæ : notes on the habits of some Brazilian species ; SEITZ, S. E. Z. li, pp. 258-260.

Castnia amalthea, Brazil, *pelopia*, Colombia, p. 69, *pellonia*, *melessus*, Up. Amazons, p. 70, DRUCE, Ent. M. M. (2) i, n. spp.

Chalcosia imitans, Butl., var. described ; PAGENSTECHE, Deutsche e. Z. Lep. iii, p. 5.

C. analis, Billiton, SNELLEN, p. 307, Tijdschr. Ent. xxxiii, n. sp.

Codane neoterica, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 177, n. sp.

Composia olympia, noticed and figured ; FRENCH, Ent. News, i, p. 153.

Coronis abbreviata, Ecuador, MAASSEN, in Stübel Reise, p. 129, n. sp.

Cyclosia ? *ochrea*, Naga Hills, ELWES, p. 385, pl. xxxiii, fig. 4, P. Z. S. 1890, n. sp.

Doratopteryx, note on the genus and species ; ELWES, Tr. E. Soc. 1890, pp. 334 & 335.

Elcysma dohertyi, Naga Hills, ELWES, p. 386, pl. xxxiv, fig. 4, P. Z. S. 1890, n. sp.

Eterusia urania, Assam, SCHAUS, Ent. Am. vi, p. 39, n. sp.

Eusemia novemmaculata, Caffraria, MABILLE, p. 54, Ann. Soc. Ent. Fr. (6) x ; *E. eoa*, *mozambica*, *nigridorsa*, p. cxxiii, *xanthopyga*, p. cxxiv (no locality mentioned, but it is probably Africa), MABILLE, Bull. Soc. Ent. Fr. 1890 ; *E. viithoroides*, China, LEECH, Ent. xxiii, p. 110 : n. spp.

Herpa subhyalina n. var. *primulina* ; ELWES, p. 382, P. Z. S. 1890.

Himantopteridæ : the position of the family, the validity of the genera discussed ; ELWES, Tr. E. Soc. 1890, pp. 329-332.

Himantopterus ?, vel *Thymara dohertyi*, Naga Hills, ELWES, p. 332, pl. x, figs. 1-7, Tr. E. Soc. 1890, n. sp.

Pais (?) *illuminata*, Bolivia, MAASSEN, in Stübel Reise, p. 129, pl. iv, fig. 20, u. sp.

Pedoptila nemopteridia, *staudingeri*, notes on ; ELWES, Tr. E. Soc. 1890, pp. 335 & 336. *P. staudingeri*, Rog., figured and described ; MABILLE, Nov. Lep. p. 4, pl. i, fig. 1.

Retina ? *flavicosta*, E. India, ELWES, p. 386, pl. xxxii, fig. 1, P. Z. S. 1890, n. sp.

Semioptila torta, noticed and neuration figured ; ELWES, Tr. E. Soc. 1890, p. 337.

Soritia ? *möller*i, Sikkim, ELWES, P. Z. S. 1890, p. 385, pl. xxxii, fig. 13, n. sp.

Seudyra dissimilis, Mandalay, SWINHÖE, Tr. E. Soc. 1890, p. 174 ; *S. subalba*, *mandarina*, *flavida*, China, LEECH, Ent. xxiii, p. 110. : n. spp.

Tascina metallica, Palawan, PAGENSTECHER, Deutsche e. Z. Lep. iii, p. 3, n. sp.

Thymara zaida, figs. 8 & 10, *caudata*, figs. 9 & 11, figured, pl. x, noticed, p. 333 ; ELWES, Tr. E. Soc. 1890.

ZYGÆNIDÆ.

[*Cf.* DOGNIN (177), DRUCE (184), ELWES (219), GROUM-GRSHIMAYLO (712), HEYLAERTS (364, 365), LEECH (477), LUCAS (494), MABILLE (496), MÖSCHLER (558), NEUMOEGEN (562), OBERTHUR (575), SWINHÖE (838), WEYMER & MAASSEN (911).

Artona sikkimensis, pl. xxxii, fig. 17, *zebra*, fig. 11, *postalba*, fig. 16, Sikkim, ELWES, p. 379, P. Z. S. 1890, n. spp.

Charidia similis, Brazil, HEYLAERTS, C.R. Ent. Belg. 1890, p. xv, n. sp.

Chloropsinus elongatus, Loja, DOGNIN, Le Nat. xii, p. 91, n. sp.

Cydosia and *Gnophaela*, systematic position noticed ; GROTE, Canad. Ent. xxii, p. 19.

Dasysphinx (?) *leuce*, Colombia, MAASSEN, in Stübel Reise, p. 129, pl. iv, fig. 18, n. sp.

Dinia laudamia, Colombia, DRUCE, P. Z. S. 1890, p. 494, n. sp.

Eupryra gigantea, Colombia, DRUCE, P. Z. S. 1890, p. 493, n. sp.

Glaucopides : cases of mimicry in this family noticed ; SEITZ, S. E. Z. li, pp. 260, &c.

Glaucopis pelidne, Sierra Leone, MABILLE, p. 35, Ann. Soc. Ent. Fr. (6) x, n. sp.

Hæmaterion dycladioides, Brazil, HEYLAERTS, C.R. Ent. Belg. 1890, p. xiv, n. sp.

Histiæa boliviana, Bolivia, DRUCE, P. Z. S. 1890, p. 493, n. sp.

Horama jalapensis, Mexico, NEUMOEGEN, Ent. Am. vi, p. 63, n. sp.

Homæocera rodriguezi, Guatemala, DRUCE, P. Z. S. 1890, p. 494, n. sp.

Hydrusa angustipenna, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv, p. 1087, n. sp.

Ira, n. g. (*Syntomidæ*), p. 63, for *I. gundlachiana*, n. sp., Cuba, p. 64 ; NEUMOEGEN, Ent. Am. vi.

Læmocharis latifeca, Bolivia, MAASSEN, in Stübel Reise, p. 129, pl. iv, fig. 19 ; *L. quinquepunctata*, p. xiii, *nigripes*, p. xiv, Brazil, HEYLAERTS, C.R. Ent. Belg. 1890 : n. spp.

Lycomorpha fumata, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 114, n. sp.

Macrocnema alesa, Bolivia, DRUCE, P. Z. S. 1890, p. 493, n. sp.

Phauda pratti, China, LEECH, Ent. xxiii, p. 81, n. sp.

Pseudocharis translucida, Loja, DOGNIN, Le Nat. xii, p. 91, n. sp.

Scopsis edwardsii, metamorphoses ; DYAR, Ins. Life, ii, p. 361.

Sontia aliena, Colombia, MAASSEN, in Stübel Reise, p. 130, pl. iv, fig. 26, n. sp.

Syntomeida epilais, metamorphoses ; DYAR, Ins. Life, ii, p. 360.

Syntomis parvipuncta, *curtiplaga*, *interniplaga*, Congo, MABILLE, p. 35, Ann. Soc. Ent. Fr. (6) x ; *S. volans*, Burma, SWINHOE, p. 173, pl. vi, fig. 6, Tr. E. Soc. 1890 ; *S. claremontii*, Java, HEYLAERTS, C.R. ent. Belg. 1890, p. xvi : n. spp.

Thyretes melinos, W. Africa, MABILLE, Ann. Soc. Ent. Fr. (6) x, p. 37, n. sp.

Trichura aliaris, Amazons, DRUCE, P. Z. S. 1890, p. 494, n. sp.

Zygæna : the following are figured by OBERTHUR, Études d'Ent. xiii, and noticed, pp. 19-24—*zuleima*, pl. viii, fig. 81, *loyselii*, figs. 76-80, *favonia*, figs. 74, 75, & 82-89, *seriziati*, figs. 71-73, *marcuna*, pl. vii, fig. 58, *algira*, figs. 59-62, *felix*, figs. 57 & 63-70, *orana*, figs. 52-56. *Z. sogdiana* var. *separata*, larva figured, pl. xix, fig. 2, described, p. 521 ; *Z. kawringi*, pl. xviii, fig. 9, figured ; Rom. Mem. iv.

Z. hissariensis, Central Asia, p. 520, pl. xix, fig. 1, GROUM-GRSHIMAÏLO, Rom. Mem. iv, n. sp.

ARCTIIDÆ.

[Cf. DOGNIN (177), DRUCE (184), FRENCH (281, 282), GROUM-GRSHIMAÏLO (712), HEYLAERTS (365), LUCAS (494), NEUMOEGEN (562, 563), OBERTHUR (575), SWINHOE (838), WEYMER & MAASSEN (911).]

Preliminary catalogue of the *Arctiidæ* of temperate North America, with notes by SMITH, continued in Canad. Ent. xxii, pp. 9, &c.

Catalogue of the *Arctiidæ* of temperate North America, with notes, a synopsis of genera, and plate of neuration, pp. 233-236, &c. ; SMITH, Canad. Ent. xxii.

Arachnis picta, metamorphoses ; DYAR, Ent. Am. vi, p. 73.

A. zuni, N. Mexico, NEUMOEGEN, Ent. Am. vi, p. 173, n. sp.

Arctia intercalaris, pl. xix, fig. 3, *glaphyra* n. var. *gratiosa*, pl. xix, fig. 5, p. 533, figured and described ; Rom. Mem. iv.

Arctia pullida, note on ; SKINNER, Ent. News, i, p. 51. *A. docta*, preparatory stages ; DYAR, Ent. Am. vi, pp. 117.

A. rupicola, Central Asia, GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 535, pl. xix, fig. 6 ; *A. brunnea*, Sumatra, HEYLAERTS, C.R. ent. Belg. 1890, p. xxix ; *A. dieckii*, British Columbia, NEUMOEGEN, Ent. Am. vi, p. 62 ; *A. favorita*, Colorado, *id. t. c.* p. 173 ; *A. rodriguezi*, Guatemala, DRUCE, p. 498, P. Z. S. 1890 : n. spp.

Automolis latania, Colombia, DRUCE, p. 495, pl. xlii, fig. 2, P. Z. S. 1890, n. sp.

Charidea amata, Colombia, DRUCE, p. 494, P. Z. S. 1890, n. sp.

Chelonia bieti n. var. *pratti* ; LEECH, Ent. xxiii, p. 111. *C. oberthuri* figured, pl. vii, figs. 47 & 48 ; OBERTHUR, Études d'Ent. xiii.

Crocota rosa, N. America, FRENCH, Canad. Ent. xxii, p. 133, n. sp.

Dionychnopus rubidus, China, LEECH, Ent. xxiii, p. 111, n. sp.

Erchia lutera, Ecuador, DRUCE, p. 496, pl. xlii, fig. 7, P. Z. S. 1890, n. sp.

Euarctia proserpina figured, Rom. Mem. iv, pl. xix, figs. 7a-c ; described p. 530.

Euchaetes conspicua, Colorado, NEUMOEGEN, Ent. Am. vi, p. 173; *E. nivea*, Ecuador, MAASSEN, in Stübel Reise, p. 131, pl. iv, fig. 28 : n. spp.

Euhalisidota agelia, Mexico, DRUCE, Ann. N. H. (6) v, p. 214, n. sp.

Eulepia cribrum, food-plants; BAKER & GOSS, Ent. M. M. (2) i, p. 298.

Halisidota caryæ, list of food-plants; BEUTENMÜLLER, Ent. Am. vi, p. 16. *H. tessellaris*, Hb., var. = (*cinctipes*, Grt.); MÖSCHLER, Abh. Senck. Ges. xvi, p. 115.

H. occidentalis, p. 46, *subalpina*, p. 47, Colorado, FRENCH, Canad. Ent. xxii; *H. labaca*, Mexico, DRUCE, Ann. N. H. (6) v, p. 214, n. spp.

Helitura lelex, Ecuador, DRUCE, p. 495, P. Z. S. 1890, n. sp.

Hypeuthyna numida, N. Africa, OBERTHUR, p. 27, pl. vi, fig. 41, Études d'Ent. xiii, n. sp.

Idalus citrina, p. 495, pl. xlii, fig. 4, *lemba*, *larissa*, fig. 5, Amazons, *lavinia*, fig. 6, British Guiana, DRUCE, P. Z. S. 1890, n. spp.

Lophocampa erebella, Ecuador, pl. iv, fig. 29, *L. (Phæoptera) conspicua*, Peru, fig. 31, MAASSEN, in Stübel Reise, p. 131, n. spp.

Nemeophila hospita, variation noticed; RÄTZER, MT. Schw. ent. Ges. viii, p. 223.

Neritos orbicularis, Colombia, MAASSEN, in Stübel Reise, p. 131, pl. iv, fig. 17, n. sp.

Numenes disparilis n. var. *separata*; LEECH, Ent. xxiii, p. 112.

Ocnogyna diva = (*Arctia haberhaueri*, Alph.), p. 536, figured, pl. xx, fig. 1; Rom. Mem. iv.

Opharus gigas, Loja, DOGNIN, Le Nat. xii, p. 176, n. sp.

Phæoptera lerica, Ecuador, *leda*, *alsa*, Dominica, *laudia*, Trinidad, *almopia*, Antioquia, p. 497, *ambrosia*, Antioquia, p. 498, DRUCE, P. Z. S. 1890, n. spp.

Phragmatobia modesta, Bolivia, MAASSEN, in Stübel Reise, p. 131, pl. iv, fig. 30, n. sp.

Purilus plectoides, Colombia, MAASSEN, in Stübel Reise, p. 131, pl. v, fig. 2, n. sp.

Sallæa lacipea, Guatemala, DRUCE, Ann. N. H. (6) v, p. 215, n. sp.

Scoliacma iridescens, *cervina*, Brisbane, LUCAS, p. 1068, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Serruretia echo, life-history; PACKARD, Psyche, v, pp. 351-353: larval habits; SLOSSON, Ent. Am. vi, p. 8.

Spilosoma lubricipeda, L., varietal note; KALLENBACH, Tijdschr. Ent. xxxiii, p. cxxiv. *S. fuliginosa*, in N. America; LUGGER, Ins. Life, ii, p. 236.

S. brisbanensis, p. 1084, *quinquefascia*, p. 1085, Australia, LUCAS, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Tigriodes splendens, p. 1068, *transcripta*, *pulverulenta*, p. 1069, Queensland, LUCAS, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Tinolius zingha, Burma, SWINHÖE, p. 185, Tr. E. Soc. 1890, n. sp.

MELAMERIDÆ, LITHOSIIDÆ, HYP SIDÆ.

[Cf. DOGNIN (177), DRUCE (184, 185), ELWES (219), LEECH (477), LUCAS (494), MABILLE (496), MÖSCHLER (558), OBERTHUR (575), SCHAUS (730), SWINHÖE (838), WEYMER & MAASSEN (911).]

Anestia inquinata, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv, p. 1083, n. sp.

Areva amourelæ, Loja, DOGNIN, Le Nat. xii, p. 128, n. sp.

Bizone: revision of the genus, with observations on synonymy and characters; ELWES, P. Z. S. 1890, pp. 389-401.

B. fasciola, China, *plateni*, North Celebes, p. 391, *puer*, E. India, p. 392, pl. xxxii, fig. 8, *ariadne*, *pratti*, China, p. 394, *dohertyi*, p. 394, fig. 4, *molleri*, *sikkimensis*, pl. xxxii, figs. 5 & 6, p. 395, *candida* (Feld.), figs. 2 & 3, p. 396, E. India, *harterti*, Assam, p. 398, ELWES, P. Z. S. 1890; *B. cruenta*, China, LEECH, Ent. xxiii, p. 49 : n. spp.

Brunia repleta, *fragilis*, *intersecta*, Queensland, LUCAS, P. Linn. Soc. N.S.W. (2) iv, p. 1070, n. sp.

† *Cephalospargeta*, n. g., *Lithosiidæ*, p. 119, for *C. elongata*, n. sp., Portorico, p. 120; MÖSCHLER, Abh. Senck. Ges. xvi.

Chiriphe angulicriptæ, Brisbane, LUCAS, p. 1079, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Clelea nigroviridis, Naga Hills, ELWES, p. 380, P. Z. S. 1890, n. sp.

Comarchis equidistans, p. 1080, *gradata*, p. 1081, *irregularis*, *obliquata*, p. 1082, *lunata*, p. 1083, Australia, LUCAS, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Cymopsis albipes, Ecuador, MAASSEN, in Stübel Reise, p. 130, pl. iv, fig. 23, n. sp.

Delphyre pallida, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 118, n. sp.

Devara lassippa, Colombia, DRUCE, P. Z. S. 1890, p. 499, pl. xlii, fig. 13, n. sp.

Eudule bada, Mexico, DRUCE, Ann. N. H. (6) v, p. 215, n. sp.

Flavinia jalapæ, Mexico, SCHAUS, Ent. Am. vi, p. 45; *F. ulcidamea*, Centr. and S. America, p. 498, *lemonia*, Ecuador, p. 499, pl. xlii, fig. 8, DRUCE, P. Z. S. 1890 : n. spp.

Gnophria limpida, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 117, n. sp.

Hectobrocha multilinea, *subnigra*, Brisbane, LUCAS, p. 1072, P. Linn. Soc. N.S.W. (2) iv : n. spp.

Hemonia dulcicula, Rangoon, SWINHÖE, p. 183, Tr. E. Soc. 1890, n. sp.

Hypsa sippia, Plötz, characters of; MABILLE, p. 37, Ann. Soc. Ent. Fr. (6) x.

Josia austria, Peru, MAASSEN, in Stübel Reise, p. 130, pl. iv, fig. 21, n. sp.

Katha? semifusca, Sikkim, ELWES, p. 388, pl. xxxii, fig. 9, P. Z. S. 1890; *K. moorei*, China, LEECH, Ent. xxiii, p. 81 : n. spp.

Lithosia imparepunctata, Comoro Is.?, OBERTHUR, p. 15, pl. iv, figs. 19

& 20, *Études d'Ent.* xiii; *L. ? anomala*, Himalaya, ELWES, p. 388, pl. xxxii, fig. 14, P. Z. S. 1890; *L. lenta*, p. 81, *costipuncta*, p. 82, China, LEECH, Ent. xxiii; *L. unicolor*, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv, p. 1071; *L. argentea*, pl. iv, fig. 25, *molybdenalis*, fig. 24, Colombia, MAASSEN, in Stübel Reise, p. 130 : n. spp.

Lyclene simplifascia, E. India, ELWES, p. 389, pl. xxxii, fig. 19, P. Z. S. 1890, n. sp.

Mieza galactina, Ecuador, MAASSEN, in Stübel Reise, p. 131, pl. iv, fig. 27, n. sp.

Microgiton larissa, *latona*, *alea*, Ecuador, DRUCE, p. 499, P. Z. S. 1890, n. spp.

Miltochrista, *rivalis*, *rufa*, China, LEECH, Ent. xxiii, p. 82, n. spp.

Mosoda bancrofti, p. 1077, *venusta*, *lineata*, p. 1078, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Nola sexmaculata, larva described; DYAR, *Ins. Life*, iii, p. 61.

N. portoricensis, Cuba and Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 118, n. sp.

Nudaria ? dudgeoni, Darjeeling, ELWES, p. 388, pl. xxxii, fig. 10, P. Z. S. 1890, n. sp.

✓ *Paniasis*, n. g., *Melameridae*, for *P. aleopetra*, n. sp., Colombia; DRUCE, p. 500, pl. xlii, fig. 9, P. Z. S. 1890.

✓ *Paraxia*, n. g., p. 120, resembling *Sarrothripa*, for *P. chameleon*, n. sp., Portorico, p. 121; MÖSCHLER, Abh. Senck. Ges. xvi.

Pentacitrotus aeneus, China, LEECH, Ent. xxiii, p. 83, n. sp.

Ræselia fragilis, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 184, n. sp.

Sarrothoceras (*Noctuidæ*) referred to *Hypsidæ*; cf. *Noctuidæ*.

Sarrotricha demiota, p. 1074, *punctata*, p. 1075, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Seaeodora rava, Brisbane, LUCAS, p. 1079, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Setina ? punctata, E. India, ELWES, p. 389, pl. xxxii, fig. 18, P. Z. S. 1890; *S. unipunctata*, *rubricans*, China, LEECH, Ent. xxiii, p. 82 : n. spp.

Sinna, cf. *Noctuidæ*.

Sorocostia mesozona, p. 1075, *argentea*, *interspersa*, p. 1076, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv, n. spp.

† *Stenola*, n. g. near *Nola*, for *S. bistriga*, n. sp., Portorico; MÖSCHLER, Abh. Senck. Ges. xvi, p. 119.

Tegulata fimbriata, China, LEECH, Ent. xxiii, p. 81, n. sp.

Thallarcha phalarota, Meyr., ♀ = (*phædropha*, Meyr.); LUCAS, p. 1080, P. Linn. Soc. N.S.W. (2) iv.

T. aurantiacea, Brisbane, LUCAS, p. 1080, P. Linn. Soc. N.S.W. (2) iv, p. sp.

Thirmida dimidiata, Wlk.; figured, pl. xlii, fig. 11, DRUCE, P. Z. S. 1890.

T. superba, Upp. Amazons, DRUCE, P. Z. S. 1890, p. 498, pl. xlii, fig. 10, n. sp.

Thrypticodes xyloglypta, Brisbane, LUCAS, p. 1073, P. Linn. Soc. N.S.W. (2) iv, n. sp.

NYCTEOLIDÆ, NYCTEMERIDÆ, EUSCHEMIDÆ.

[Cf. DRUCE (405), ELWES (219), FRENCH (282), HEYLAERTS (365), OBERTHUR (575), SNELLEN (823), SWINHOE (838).]

Chionomera pulchella, Himalaya, ELWES, p. 387, pl. xxxii, fig. 15, P. Z. S. 1890, n. sp.

Euschema ludifica, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 202, n. sp.

Hylophila magnifica, China, LEECH, Ent. xxiii, p. 83, n. sp.

Nyctemera pallescens, Comoro Is.; OBERTHUR, p. 15, pl. iv, fig. 21, Études d'Ent. xiii; *N. vollenhovii*, Flores, &c., SNELLEN, p. 276, pl. xi, fig. 4, Tijdschr. Ent. xxxiii; *N. sumatrensis*, *tritoides*, Sumatra, HEYLAERTS, p. xvii, C.R. Ent. Belg. 1890 : n. spp.

Pitthea agenoria, Congo, DRUCE, in Jameson Story Rear Column, p. 451, n. sp.

Tyana superba, Moore, systematic position discussed; SNELLEN, Notes Leyd. Mus. xii, p. 177.

LIPARIDÆ, ANAPHIDÆ.

[Cf. BEUTENMÜLLER (51), DOGNIN (177), DRUCE (184), GROUM-GRSHIMAÏLO (712), LEECH (477), LUCAS (494), MABILLE (496, 500), MABILLE & VUILLOT (502), PAGENSTECHER (594), RASPAIL (639), SHARPE (784), WEYMER & MAASSEN (911).]

Artaxa charmetanti, Algeria, MABILLE, p. cciv, Bull. Soc. Ent. Fr. 1890; *A. montis*, China, LEECH, Ent. xxiii, p. 111 : n. spp.

Birnara nubila, Butl., figured, Tidschr. Ent. xxxiii, pl. xii, fig. 3.

Carama jaromillo, Loja, DOGNIN, Le Nat. xii, p. 73, n. sp.

Chelepteryx collesi, Gray, metamorphoses figured; MCCOY, Prodr. Zool. Vict. pl. cxvii.

↓ *Cænostegia*, n. g. (*Cnethocampides*, n. fam.), for *Bombyx rhadama*, and *diego*, Coq., and the following n. spp. from Madagascar, viz., *barrei* and *flavens*; MABILLE, pp. cxlvi & cxlvii, Bull. Soc. Ent. Fr. 1890.

Crinola flavicollis, China, LEECH, Ent. xxiii, p. 111, n. sp.

Dasychira (*Dasorgyia*) *selenophora* figured (as *D. pumila*); Rom. Mem. iv, pl. xix, fig. 4.

D. fidjiensis, Fiji Is., MABILLE & VUILLOT, Nov. Lep. pl. i, fig. 2, p. 5, n. sp.

Genussa altaba, Ecuador, DRUCE, P. Z. S. 1890, p. 500; *G. albifascia*, Peru, MAASSEN, in Stübel Reise, p. 132, pl. v, fig. 3 : n. spp.

Gynaphora pluto, China, LEECH, Ent. xxiii, p. 111, n. sp.

Hebena ? *bicolor*, Ecuador, MAASSEN, in Stübel Reise, p. 132, pl. v, fig. 1, n. sp.

↑ *Heteranaphe*, n. g. (*Anaphidæ*), p. 442, for *H. jacksoni*, n. sp., E. Africa, p. 443; SHARPE, Ann. N. H. (6) v.

Hylemera luteipes, W. Africa, MABILLE, p. 38, Ann. Soc. Ent. Fr. (6) x, n. sp.

Jana mandarina, China, LEECH, Ent. xxiii, p. 112, n. sp.

Leucoma macrocera, E. Africa, SHARPE, Ann. N. H. (6) v, p. 443 ; *L. pasaleuca*, Colombia, MAASSEN, in Stübel Reise, p. 132, pl. v, fig. 9, n. spp.

Liparis dispar, eggs destroyed by an *Acarus* ; RASPAIL, Bull. Soc. Z. Fr. xv, p. 94. *L. auriflua*, nature of the colouring-matter of its cocoon ; FRENZEL, Zool. Anz. xiii, p. 580.

Melanothrix alternans, Palawan, PAGENSTECHE, Deutsche e. Z. Lep. iii, p. 13, n. sp.

Ocneria dispar, its parasites and occurrence in N. America ; HOWARD, P. E. Soc. Wash. i, p. 264 ; habits and list of parasites of ; RILEY & HOWARD, Ins. Life, ii, pp. 208-211.

Orgyia tristis, Central Asia, GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 554, pl. xx, fig. 6 ; *O. prisca*, China, LEECH, Ent. xxiii, p. 111 ; *O. inornata*, Florida, BEUTENMÜLLER, p. 300, Psyche, v : n. spp.

Porthesia (Euphrostis) collucens, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv, p. 1090, n. sp.

Teara barnardi, p. 1088, *argentosa*, p. 1089, *protrahens*, p. 1090, Queensland, LUCAS, P. Linn. Soc. N.S.W. (2) iv, n. spp.

PSYCHIDÆ.

[Cf. HEYLAERTS (362, 363, 366, 367), MABILLE (497), MEYRICK (537), MOORE (552), WEYMER & MAASSEN (911).]

Acanthopsyche (Amicta) grummi figured, pl. xx, figs. 9a-f ; Rom. Mem. iv.

Babula, n. g., for *B. grotei*, n. sp., Calcutta ; MOORE, p. 262, J. A. S. B. lix, pt. 2.

Bijugis silkimensis, E. India, HEYLAERTS, C.R. Ent. Belg. 1890, p. xi, n. sp.

Chalia staudingeri figured ; Rom. Mem. iv, p. 551.

C. emiliæ, Mozambique, HEYLAERTS, p. clxxx, C.R. Ent. Belg. 1890 ; *C. elwesi*, E. India, HEYLAERTS, t. c. p. x : n. spp.

Eumeta junodi, Natal, HEYLAERTS, p. cxxx, C.R. Ent. Belg. 1890, n. sp.

Kophene weyersi, noticed as distinct from *Perina bipars* ; HEYLAERTS, C.R. Ent. Belg. 1890, p. xii.

K. moorei, E. India, p. xi, *snelleni*, Assam, p. xii, HEYLAERTS, C.R. Ent. Belg. 1890, n. spp.

✓ *Moffatia*, n. g., p. 263, for *M. plumicauda*, n. sp., Himalaya, p. 264 ; MOORE, J. A. S. B. lix, pt. 2.

Monda rogenhoferi, p. clxxxi, *major*, p. clxxxii, E. Africa, HEYLAERTS, C.R. Ent. Belg. 1890, n. spp.

Eceticus saclavus, Madagascar, MABILLE, p. 52, Ann. Soc. Ent. Fr. (6) x, n. sp.

Perina bipars, Wlk., referred to *Chalia* ; HEYLAERTS, C.R. Ent. Belg. 1890, p. xii.

Psyche calberlæ, Pyrenees and Tyrol, HEYLAERTS, p. cxxxi, C.R. Ent. Belg. 1890 ; *P. ? nebulella*, Ecuador, MAASSEN, in Stübel Reise, p. 132, pl. v, fig. 8 : n. spp.

¹*Rasicota*, n. g., for *R. albescens*, n. sp., Calcutta; MOORE, p. 263, J. A. S. B. lix, pt. 2.

NOTODONTIDÆ, CNETHOCAMPIDÆ.

[Cf. BEHR (42), BEUTENMÜLLER (51), CHAPMAN (128), DOGNIN (177), DRUCE (184), DYAR (208), ELWES (219), FRENCH (282), GRAESER (322), MABILLE (499), PACKARD (590), PAGENSTECHER (594), SCHAUS (730), SWINHOE (838).]

Anodonta fascis, Jalapa, SCHAUS, Ent. Am. vi, p. 47, n. sp.

Apatelodes torrefacta, life-history; PACKARD, P. Bost. Soc. xxiv, p. 520.

Apatelodes, n. sp., cf. *Saturniidae*, &c.

Cecrita (Heterocampa) guttivitta, Wlk., life-history; PACKARD, P. Bost. Soc. xxiv, p. 544.

Ceira junctura, figured; WATERHOUSE, Aid, pl. clxxxvii, fig. 4.

Celeia sikkima, auritracta, figured; WATERHOUSE, Aid, pl. clxxxvii, figs. 1 & 2.

Cerura borealis, p. 553, *occidentalis*, p. 555, *cinerea*, p. 556, life-histories; PACKARD, P. Bost. Soc. xxiv. *C. multiscripta*, metamorphoses; DYAR, Psyche, v, p. 393: pupa noticed; CHAPMAN, Ent. xxiii, p. 203. *C. prasana* figured; WATERHOUSE, Aid, pl. clxxxvii, fig. 3. *C. vinula*, larva and birds; BUTLER, Ann. N. H. (6) vi, p. 326.

C. cinereoides, California, DYAR, Canad. Ent. xxii, p. 253, n. var. or n. sp.

¹*Cnethocampa* and *Cænostegia*, [n. g. *Liparidæ*, *suprà*] to be a distinct family, *Cnethocampides*; MABILLE, p. cxlvi, Bull. Soc. Ent. Fr. 1890. *Cnethocampa*, n. sp., cf. *Dryocampa*, *Saturniidae*, &c.

Dasylophia anguina, life-history; PACKARD, P. Bost. Soc. xxiv, p. 529.

Datana: characters and table of the N. American species; DYAR, Ent. Am. vi, pp. 127-132. *D. integerrima*, life-history; PACKARD, P. Bost. Soc. xxiv, p. 518. *D. palmii*, preparatory stages; DYAR, Ent. Am. vi, p. 181. *D. angusii*, preparatory stages; BEUTENMÜLLER, t. c. p. 219. *D. major, drexelii*, life-histories; DYAR, Psyche, v, pp. 414-420. *D. contracta*, preparatory stages; BEUTENMÜLLER, Ent. News, i, p. 144.

D. californica (Riley), California, DYAR, Ent. Am. vi, p. 127; *D. modesta*, Florida, *palmii*, Pennsylvania, BEUTENMÜLLER, p. 299, Psyche, v: n. spp.

Dicranura platea, Jalapa, SCHAUS, Ent. Am. vi, p. 46, n. sp.

Diloba cæruleocephala, food plant, BUTLER, Ent. xxiii, p. 263.

Drymonia dodonæa, food-plants; JEFFREY, Ent. M. M. (2) i, p. 256.

Edema albifrons, metamorphoses; BEUTENMÜLLER, Ent. Am. vi, p. 75: life-history; PACKARD, P. Bost. Soc. xxiv, p. 526.

E. lanassa, p. 509, *alata*, p. 510, Panama, DRUCE, P. Z. S. 1890, n. spp.

Hemiceras lissa, ania, Ecuador, p. 511, *losa*, Trinidad, *levana*, Ecuador, p. 512, DRUCE, P. Z. S. 1890, n. spp.

Heterocampa pulvereæ, mature larva, p. 549, *unicolor*, life-history, p. 550

marthesiæ, life-history, p. 551, PACKARD, P. Bost. Soc. xxiv. *H. subrotata*, preparatory stages ; DYAR, Ent. Am. vi, p. 209.

H. gamarra, Loja, DOGNIN, Le Nat. xii, p. 128, n. sp.

Hybocampa milhauseri, notes on metamorphoses ; CHAPMAN (128).

Hypereschna annulata, Burma, SWINHÖE, Tr. E. Soc. 1890, p. 189, n. sp.

Ichthyura inclusa, Hb., partial life-history ; PACKARD, P. Bost. Soc. xxiv, p. 516.

Janassa lignicolor, life-history ; PACKARD, P. Bost. Soc. xxiv, p. 542.

Lirimiris veltini, Loja, DOGNIN, Le Nat. xii, p. 128, n. sp.

Lochmæus manteo, life-history ; PACKARD, P. Bost. Soc. xxiv, p. 546.

Natada lutea, Palawan, PAGENSTECHER, Deutsche e. Z. Lep. iii, p. 14, n. sp.

Nerice bidentata, larva described ; DYAR, Ins. Life, iii, p. 62.

Notodonta stragula, mature larva noticed ; PACKARD, P. Bost. Soc. xxiv, p. 525.

N. ? gigantea, E. India, ELWES, p. 399, P. Z. S. 1890, n. sp.

Ædenasia concinna, life-history ; PACKARD, P. Bost. Soc. xxiv, p. 532.

Æ ? alcimede, S. & Centr. America, DRUCE, p. 510, P. Z. S. 1890, n. sp.

Phalera amphissa, British Guiana, DRUCE, p. 509, P. Z. S. 1890, n. sp.

Pheosia rimosa, partial life-history ; PACKARD, P. Bost. Soc. xxiv, p. 523.

P. costalis figured ; WATERHOUSE, Aid, pl. clxxxvii, fig. 5.

Platycerura gigantea, N. America, FRENCH, p. 134, Canad. Ent. xxii, n. sp.

Pygera troglodyta, Amurland, GRAESER, B. E. Z. xxxv, p. 72, n. sp.

Rosema sciritis, Ecuador, *simois*, Argentine Rep., DRUCE, p. 511, P. Z. S. 1890, n. spp.

Schizura ipomææ, Db., life-history ; PACKARD, P. Bost. Soc. xxiv, p. 535, pl. iv : larva described ; DYAR, Ins. Life, iii, p. 62. *S. leptinoides*, preparatory stages ; DYAR, Ent. Am. vi, p. 230.

LIMACODIDÆ, DREPANULIDÆ.

[Cf. DOGNIN (177), DRUCE (184, 185), HEYLAERTS (365), LEECH (477), MABILLE (497), PACKARD (591), SCHAU (730), SWINHÖE (838).]

Cania ? minutissima, Rangoon, SWINHÖE, p. 195, pl. vi, fig. 11, Tr. E. Soc. 1890, n. sp.

Dalcera leberna, Ecuador, *ampela*, Bolivia, p. 505, *laxta*, Ecuador, p. 506, DRUCE, P. Z. S. 1890, n. spp.

Drepana arcuata, larval ontogeny and seasonal dimorphism ; PACKARD, P. Bost. Soc. xxiv, pp. 482-489. *D. hamula* referred to *Dryopteris* ; PACKARD, t. c. p. 484.

D. parvula, p. 112, *acuminata*, *bidens*, *flavilinea*, p. 113, China, LEECH, Ent. xxiii, n. spp.

Dryopteris rosea, larva described, seasonal dimorphism ; PACKARD, P. Bost. Soc. xxiv, pp. 490-493.

Echedorus infernalis, Jalapa, SCHAU, Ent. Am. vi, p. 46, n. sp.

Heterogenea obliqua, China, LEECH, Ent. xxiii, p. 83, n. sp.

- Limacodes inferna*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 194, n. sp.
- Miresa fumifera*, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 195, pl. vi, fig. 13; *M. sanguineo-maculata*, p. xxvii, *nigriplaga*, p. xxviii, Sumatra, HEYLAERTS, C.R. Ent. Belg. 1890; *M. ? amisena*, Ecuador, DRUCE, p. 506, P. Z. S. 1890 : n. spp.
- Monema ocellata*, figured; WATERHOUSE, Aid, pl. clxxxvii, fig. 6.
- Narosa lacteola*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 193, n. sp.
- Oxytenis ? ecuadorensis*, Loja, DOGNIN, Le Nat. xii, p. 50 (cf. also *Oxytenus*, *Lasiocampidæ*), n. sp.
- Pamea pallida*, pl. v, fig. 4, *excisa*, fig. 5, Ecuador, MAASSEN, in Stübel Reise, p. 133, n. spp.
- Parasa affinis*, p. 52, *humilis*, p. 53, Madagascar, MABILLE, Ann. Soc. Ent. Fr. (6) x; *P. mirza*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 192 : n. spp.
- Parnia*, n. g., near *Parasa*, for *P. cambouei*, n. sp., Madagascar; MABILLE, p. liii, Ann. Soc. Ent. Fr. (6) x.
- Perola lacepea*, Mexico, DRUCE, Ann. N. H. (6) v, p. 218, n. sp.
- Perophora inscita*, Mexico, SCHAUS, Ent. Am. vi, p. 46, n. sp.
- Phobetron pithecium*, mode of moulting; DYAR, Ent. News, i, p. 160.
- † *Proneca*, n. g. *Limacodidæ*, p. 193, for *P. fola*, n. sp., Burma, p. 194, pl. vi, fig. 8; SWINHOE, Tr. E. Soc. 1890.
- † *Scytalopteryx*, n. n. for *Phyllopteryx*, Snell. (habits of *S. elongata*, noticed); RITSEMA, p. 260, Tijdschr. Ent. xxxiii.
- Semyra agemytha*, Mexico, DRUCE, p. 218, Ann. N. H. (6) v, n. sp.
- Setora neutra*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 195; *S. divisa*, China, LEECH, Ent. xxiii, p. 83 : n. spp.
- Susica ? cepphica*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 192, n. sp.
- Thosea lutea*, Sumatra, HEYLAERTS, C.R. Ent. Belg. 1890, p. xxix, n. sp.
- Varina ornata*, sexes noticed; SLOSSON, Ent. Am. vi, p. 136.

SATURNIIDÆ, CERATOCAMPIDÆ, BOMBYCIDÆ, LASIOCAMPIDÆ.

[Cf. BEHR (42), COTES (153), DOGNIN (177), DRUCE (184, 185, 186, 405), FRENCH (281), LEECH (477), LUCAS (494), NEUMOEGEN (562), OBERTHUR (575), SCHAUS (730), SWINHOE (838), WEYMER (910), WEYMER & MAASSEN (911).]

Notes on silk-producing and other *Bombyces*; WAILLY, Ent. xxiii, pp. 119-122.

Antheraea thespis, China, LEECH, Ent. xxiii, p. 112; *A. intermedia*, Queensland, LUCAS, p. 1091, P. Linn. Soc. N.S.W. (2) iv : n. spp.

Anthocroca lebethra, *ampea*, *amycla*, Ecuador, DRUCE, p. 507, P. Z. S. 1890, n. spp.

Apatelodes anava, Ecuador, DRUCE, p. 504, P. Z. S. 1890, n. sp.

Arsenura richardsoni, Mexico, DRUCE, Ann. N. H. (6) v, p. 217, n. sp.

Asthenidia buckleyi, p. 507, *amphira*, p. 508, Ecuador, DRUCE, P. Z. S. 1890, n. spp.

Automeris jivaros, Zamora, DOGNIN, Le Nat. xii, p. 10, n. sp.

Bombyx mori, cutaneous excretory organs ; VERNON (861) : development of unfertilised eggs ; VERNON (865) : its original country ; MUKERJI (560). *B. arbusculæ* noticed ; FALLOU, Bull. Soc. Ent. Fr. (6) x, p. xlvii. *B. philopalus*, fig. 34, *staudingeri*, ♀, fig. 37, figured, pl. vi, OBERTHUR, Études d'Ent. xiii. *B. callunæ*, early stages of ; YOUNG, Ent. xxiii, p. 259.

B. vallantini, p. 28, pl. vi, fig. 33, *datini*, p. 29, figs. 31 & 32, *lutea*, figs. 35 & 36, *brunnea*, fig. 39, p. 29, N. Africa, OBERTHUR, Études d'Ent. xiii, n. spp.

Bunæa jamesoni, Congo, DRUCE, in Jameson Story Rear Column, p. 448, n. sp.

Carthara amisenæ, Ecuador, DRUCE, p. 506, P. Z. S. 1890, n. sp.

Cæculia fibra, Mexico, SCHAUS, Ent. Am. vi, p. 45, n. sp.

Coloradia lepta, Paraguay, DRUCE, P. Z. S. 1890, p. 501, n. sp.

Crateronyx sardunapalus figured, pl. xx, fig. 8 ; Rom. Mem. iv.

Cricula burmana, Burma, SWINHÖE, Tr. E. Soc. 1890, p. 198, n. sp.

Dirphia laverna, pl. xliii, fig. 1, *latemedia*, Ecuador, DRUCE, p. 501, P. Z. S. 1890 ; *D. nata*, pl. v, fig. 12, *famula*, fig. 14, *erythropus*, fig. 10, Ecuador, MAASSEN, in Stübel Reise, p. 134 : n. spp.

Draconipteris gigantea, Ecuador, DRUCE, p. 502, pl. xliii, fig. 4, P. Z. S. 1890, n. sp.

Dryocampa riversii, California, BEHR, P. Cal. Ac. Sci. (2) ii, p. 94, n. sp.

D. riversii referred to *Onethocampa* ; BEHR, Zee, i, p. 106.

Eacles leona, Paraguay, DRUCE, P. Z. S. 1890, p. 500, n. sp.

Eriogaster aleria, Ecuador, DRUCE, p. 503, P. Z. S. 1890, n. sp.

Gastropacha modulata, Burma, SWINHÖE, Tr. E. Soc. 1890, p. 197, pl. vi, fig. 18, n. sp.

Hemileuca maia, larva noticed ; PACKARD, p. 327, Psyche v.

Hydrias deformis, Mexico, SCHAUS, Ent. Am. vi, p. 45 ; *H. nebulosa*, Colombia, MAASSEN, in Stübel Reise, p. 135, pl. v, fig. 13 ; *H. amathuria*, *lascoria*, pl. xlii, fig. 12, *laudia*, p. 503, *ampira*, fig. 14, *amida*, fig. 15, *lecca*, p. 504, Ecuador, DRUCE, P. Z. S. 1890 : n. spp.

Hyperchiria nyctimena, Walk., larva noticed ; MAASSEN, in Stübel Reise, p. 50.

Lasiocampa demissa, Ecuador, MAASSEN, in Stübel Reise, p. 135, pl. v, fig. 15, n. sp.

Lebeda lineata, Ecuador, MAASSEN, in Stübel Reise, p. 135, pl. v, fig. 11, n. sp.

Lenodora semihyalina, Burma, SWINHÖE, Tr. E. Soc. 1890, p. 196, pl. vi, figs. 10 & 16, n. sp.

Norasuma richteri, Celebes, WEYMER, Deutsche e. Z. Lep. iii, p. 34, pl. i, figs. 4 & 5, n. sp.

Ocha macerra, Mexico, SCHAUS, Ent. Am. vi, p. 45, n. sp.

Æcelostera amoria, Ecuador, DRUCE, p. 505, P. Z. S. 1890, n. sp.

Oxytenus laverna, Ecuador, DRUCE, p. 502, pl. xliii, fig. 5, P. Z. S. 1890, n. sp.

Platysamia cecropia, sexual difference in cocoons ; SKINNER, Ent. News, i, p. 19.

- Prismoptera aminula*, S.E. Brazil, DRUCE, p. 506, P. Z. S. 1890, n. sp.
Pseudohazis eglanterina, life-history ; PACKARD, p. 325, Psyche, v.
Samia cyntia, preparatory stages ; BEUTENMÜLLER, Ent. Am. vi, p. 216.
Saturnia io, variation, habits of larva ; HINCKLEY, Psyche, v, p. 318.
S. pavonia, food plant ; WINKLEY, Ent. xxiii, p. 261.
S. olivacea, Thibet, OBERTHUR, p. 44, pl. x, fig. 107, Études d'Ent. xiii ;
S. oberthuri, China, LEECH, Ent. xxiii, p. 49 ; *S. medea*, Ecuador, MAASSEN,
 in Stübel Reise, p. 133, pl. v, fig. 7 : n. spp.
Sphingicampa bisecta n. var. *nebulosa* ; NEUMOEGEN, Ent. Am. vi, p. 63.
Tolyte velleda, metamorphoses ; FRENCH, Canad. Ent. xxii, p. 255.
T. distincta, Colorado, FRENCH, Canad. Ent. xxii, p. 45, n. sp.

COSSIDÆ, HEPIALIDÆ.

[Cf. DRUCE (184), FRENCH (281), GROUM-GRSHIMAÏLO (712), HEYLAERTS (365), MEYRICK (535, 537), SCHAU (730), SWINHOE (838), TEICH (845), WEYMER & MAASSEN (911).]

The Australian *Hepialidæ* revised ; MEYRICK, P. Linn. Soc. N.S.W. (2) iv, pp. 1117-1136.

Arbela ? *dea*, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 199, pl. vi, fig. 7, n. sp.

Charagia eximia figured, pl. xi ; SCOTT, Austr. Lep. ii.

Cossus cadambæ, *tessellatus*, figured ; WATERHOUSE, Aid, pl. clxxxvii, figs. 7 & 8.

C. brucei, Colorado, FRENCH, Canad. Ent. xxii, p. 44 ; *C. amundasa*, Ecuador, DRUCE, p. 508, pl. xlii, fig. 16, P. Z. S. 1890 : n. spp.

Endagria monticola, Central Asia, GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 544, p. xx, fig. 5, n. sp.

Hectomanes, n. g., *Hepialidæ*, for *Fraus*, Wlk., p. 1125, with *H. noserodes*, p. 1126, *polyspila*, p. 1127, n. spp., Australia ; MEYRICK, P. Linn. Soc. N.S.W. (2) iv.

Hepialus paropus, *momus*, pl. xliii, fig. 3, p. 508, *metellus*, fig. 2, p. 509, Ecuador, DRUCE, P. Z. S. 1890, n. spp.

Holcocerus sericeus, Central Asia, GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 541, pl. xx, fig. 3, n. sp.

Langsdorfia marmorata, Ecuador, MAASSEN, in Stübel Reise, p. 136, pl. iv, fig. 15, n. sp.

✓ *Perissectis*, n. g., for *Hepialus australasie*, Don. ; MEYRICK, p. 1119, P. Linn. Soc. N.S.W. (2) iv.

Phassus basirei, Mexico, SCHAU, Ent. Am. vi, p. 46, n. sp.

Phragmataecia cinerea, Baltic, TEICH, Arb. Ver. Riga (n.s.) vi, p. 19 ; *P. furia*, Centr. Asia, GROUM-GRSHIMAÏLO, in Rom. Mem. iv, p. 542, pl. xx, fig. 4 : n. spp.

Pielus hyalinatus, Schäffer, = (*imperialis*, Olliff) ; LUCAS, P. Linn. Soc. N.S.W. (2) iv, p. 604, but cf. OLLIFF, t. c. pp. 641 & 642.

Porina niphadias, Australia, p. 1122, *sphragidias*, p. 1123, Tasmania,

MEYRICK, P. Linn. Soc. N.S.W. (2) iv ; *P. dinodes*, New Zealand, *id.* Tr. N. Z. Inst. xxii, p. 206 : n. spp.

↓ *Suالمulleria*, n. g., for *Cossus stumpfi*, Saal. ; MABILLE, p. cxlviii, Bull. Soc. Ent. Fr. 1890.

↓ *Squamura*, n. g. (*Cossidae*), for *S. maculata*, n. sp., Java ; HEYLAERTS, p. xxvi, C.R. Ent. Belg. 1890.

↓ *Trictena*, n. g., for *Cossus labyrinthicus*, Don. ; MEYRICK, p. 1135, P. Linn. Soc. N.S.W. (2) iv.

Triodia monticola, p. 136, pl. iv, fig. 14, *lucicola*, p. 137, fig. 16, Ecuador, MAASSEN, in Stübel Reise, n. spp.

Zelotypia stacyi, Scott, referred to *Leto*, Hb. ; MEYRICK, p. 1133, P. Linn. Soc. N.S.W. (2) iv.

Zeuzera pyrina, Fab., early stages of ; MACHESNEY, Ent. Am. vi, p. 31, woodcuts.

Z. oblita, Rangoon, SWINHOB, Tr. E. Soc. 1890, p. 198, pl. vi, fig. 9, n. sp.

CYMATOPHORIDÆ.

[*Cf.* DOGNIN (177), GROTE (325), SMITH (813).]

Bombycia candida, Florida, SMITH, Ent. Am. vi, p. 179, n. sp.

Thyatira batis, L., var. described and figured ; REUTER, Ent. Tidskr. xi, p. 201. *T. trimaculata*, n. varr. *chinensis*, p. 113, *albomaculata*, p. 114, LEECH, Ent. xxiii.

T. staphyla, Loja, DOGNIN, Le Nat. xii, p. 155, n. sp.

NOCTUIDÆ.

[*Cf.* BUTLER (101, 102), CHAPMAN (127), DOGNIN (177), DRUCE (184, 317), DUURLOO (196), EDWARDS (211), ELWES (219), FAILLA-TEDALDI (237), GRAESER (322), GROTE (325), HEYLAERTS (365), LUCAS (494), MABILLE (476, 496), MABILLE & VUILLOT (502), MÖSCHLER (558), OBERTHUR (575, 577), PAGENstecher (593, 594), SMITH (804, 805, 806, 807, 808, 809, 811, 812, 814, 815), STANDFUSS (829), SWINHOB (838), WEYMER & MAASSEN (911).]

For extensive synonyms of species of *Noctuidæ* and remarks on genera, &c., see BUTLER (101).

Abagrotis, n. g. for part of *Agrotis* ; SMITH, p. 49, Bull. U. S. Nat. Mus. No. 38.

Acantholipes maculifera, Mab., redescribed and figured ; MABILLE, Nov. Lep. p. 7, pl. 1, fig. 5.

Achæa quadrilunata, Java, PAGENstecher, JB. Nassau Ver. xliii, p. 109 ; *A. schausi*, Mexico, DRUCE, p. 380, pl. xxxii, fig. 5, Biol. Centr. Am. Heter. i : n. spp.

Acontia, its composition discussed ; MÖSCHLER, p. 153, Abh. Senck. Ges. xvi.

A. chloromelana, W. Africa, MABILLE, p. 39, Ann. Soc. Ent. Fr. (6) x ;

A. splendens, Panama, DRUCE, p. 516, P. Z. S. 1890; *A. mixta*, p. 154, *unipunctata*, p. 155, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi : n. spp.

Acronycta: the genus discussed, classified, and divided, with remarks on and figures of the earlier stages; CHAPMAN, Ent. Rec. pp. 1, &c., pls. i, ii, & v. See *Bisulcia*, *Cuspidia*, *Viminia*.

Acronycta præclara, Amurland; GRAESER, B. E. Z. xxxv, p. 74; *A. jucunda*, Colombia, MAASSEN, in Stübel Reise, p. 137, pl. vi, fig. 24 : n. spp.

Adelphagrotis, n. g., for part of *Agrotis*; SMITH, p. 38, Bull. U. S. Nat. Mus. No. 38.

Agrotis, and allied genera, monograph of the N. American species; SMITH, Bull. U. S. Nat. Mus. No. 38. *A. tritici* and *cursoria*, varietal note; SOUTH, Ent. xxiii, pp. 145-148. *A. ashworthii*, notes on; GARDNER, Ent. xxiii, p. 5. *A. peza*, Berg, = (*ingoufi*, Mab.), *pesronii*, Gn., = (*digramma*, Mab.); BERG, pp. clxix & clxx, Bull. Soc. Ent. Fr. 1890. *A. spina*, habits; LENDENFELD, Zool. Gart. xxxi, p. 240.

A. aurulenta, p. 215, *ingeniculata*, p. 216, N. America, SMITH, Bull. U. S. Nat. Mus. No. 38; *A. abnormis*, *erratica*, p. 41, *planifrons*, p. 42, *congrua*, *inelegans*, p. 43, *clemens*, p. 44, *satiens*, *insertans*, p. 45, *cogitans*, p. 46, *atomaris*, *remota*, p. 47, *annulipes*, p. 48, *murdocki*, *quinguelinea*, p. 49, *incallida*, *lutulenta*, p. 50, *alticola*, p. 51, *basiflava*, p. 52, *rena*, p. 53, *spectanda*, p. 54, *nostra*, p. 55, *furtivus*, p. 56, *infelix*, p. 57, N. America, SMITH, Tr. Am. Ent. Soc. xvii; *A. atristrigata*, British Columbia, SMITH, Ent. Am. vi, p. 76; *A. lamptera*, p. 513, *A. ? limenia*, p. 514, Guatemala, DRUCE, P. Z. S. 1890; *A. interposita*, pl. vi, fig. 19, *bistrigata*, fig. 13, p. 142, *præstans*, fig. 16, Colombia, *tresignata*, fig. 21, *obscura*, fig. 20, p. 143, *extincta*, fig. 23, *interrupta*, fig. 25, *unicolora*, fig. 27, *plectina*, fig. 28, Ecuador, p. 144, MAASSEN, in Stübel Reise; *A. ingouffi*, pl. x, fig. 9, *digramma*, pl. xi, fig. 2, p. 146, *dianthæciæ*, pl. x, fig. 8, p. 147, *aethes*, pl. x, fig. 7, p. 149, Patagonia, MABILLE, N. Arch. Mus. (3) i : n. spp.

Alamis rufomixta, W. Africa, MABILLE, p. 41, Ann. Soc. Ent. Fr. (6) x, n. sp.

Aletia ? erigida, Burma, SWINHOE, Tr. E. Soc. 1890, p. 221, n. sp.

Anarta agonææ, Mexico, DRUCE, p. 515, P. Z. S. 1890, n. sp.

Anateinoma, n. g., placed next *Thalpochares*, p. 169, for *A. affabilis*, n. sp., Portorico, p. 170, pl., fig. 14; MÖSCHLER, Abh. Senck. Ges. xvi.

Annaphila casta, Oregon, EDWARDS, Ent. Am. vi, p. 114, n. sp.

Anomis prærupta, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 173, n. sp.

Anophia oligomelas, W. Africa, MABILLE, p. 43, Ann. Soc. Ent. Fr. (6) x; *A. longinquua*, p. 233, *undara*, p. 234, Rangoon, SWINHOE, Tr. E. Soc. 1890 : n. spp.

Apamea ophiogramma and *leucostigma*, variation in Britain; TUTT, Ent. xxiii, pp. 12 & 13.

A. lebruni, Patagonia, MABILLE, N. Arch. Mus. (3) i, p. 150, pl. x, fig. 10, n. sp.

Aramuna lutosæ, Rangoon, SWINHOE, p. 225, pl. vii, fig. 11, n. sp.

Arasada lycaugesaria, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 232, n. sp.

Ardisura grandis, Mexico, DRUCE, p. 516, P. Z. S. 1890, n. sp.

Argidia calus, Guen., = (*subrubra*, Feld.) ; DRUCE, p. 398, Biol. Centr. Am. Heter. i.

A. subnebulosa, Ecuador, MAASSEN, in Stübel Reise, p. 151, pl. vii, fig. 6, n. sp.

Arsiloncha roseana, Burma, SWINHOE, Tr. E. Soc. 1890, p. 220, pl. vi, fig. 17, n. sp.

Athyryma trispila, W. Africa, p. 45, *subangularis*, Mayotte, p. 46, MABILLE, Ann. Soc. Ent. Fr. (6) x, n. spp.

Axylia abstracta, Burma, SWINHOE, Tr. E. Soc. 1890, p. 221, pl. vii, fig. 13 ; *A. bucephalina*, Patagonia, MABILLE, N. Arch. Mus. (3) i, p. 151, pl. xi, fig. 30 : n. spp.

Bagada diffisa, Burma, SWINHOE, Tr. E. Soc. 1890, p. 224, pl. vii, fig. 17, n. sp.

Baniana significans, ♀ = (*bifida*, H. S.) ; MÖSCHLER, p. 200, Abh. Senck. Ges. xvi.

Barathra, Hb., = (*Copimamestra*, Grt.) ; *Mamestra brassicæ* referred to it ; SMITH, p. 457, P. U. S. Nat. Mus. xii.

Bendis magdalia, Gn., fully described ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 206.

B. æzica, *æmylia*, pl. xxxii, fig. 8, Panama, *ænaria*, Mexico, fig. 6, DRUCE, p. 378, Biol. Centr. Am. Heter. i, n. spp.

✓ *Bisulcia*, n. subg. of *Acronycta* ; CHAPMAN, p. 28, Ent. Rec. i.

Bolina : notes on the variation, synonymy, and characters of *contorta*, *leucomelana*, *fasciolaris*, *januaris*, *nigrescens*, *rectifascia*, *russaris* ; MÖSCHLER, pp. 185-193, Abh. Senck. Ges. xvi.

B. nebulosa, Colombia, MAASSEN, in Stübel Reise, p. 149, pl. vii, fig. 13, n. sp.

Brujas circe figured, pl. xxxi, fig. 11, Biol. Centr. Am. Heter. i.

Bryophila impar, note on characters of ; FARREN, Ent. M. M. (2) i, p. 303.

B. conjecturalis, Burma, SWINHOE, Tr. E. Soc. 1890, p. 222, pl. vii, fig. 10, n. sp.

Callierges divisa, H. S., fully described ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 138.

C. recondita, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 140, n. sp.

Callopietria carrioni, Ecuador, DOGNIN, Le Nat. xii, p. 155 ; *C. agyra*, p. 517, *langia*, p. 518, Panama, DRUCE, P. Z. S. 1890 : n. spp.

Calophasia bicolor, Patagonia, MABILLE, N. Arch. Mus. (3) i, p. 153, pl. xi, fig. 8, n. sp.

Calymnia penicillata, Amurland, GRAESER, B. E. Z. xxxv, p. 75, n. sp.

Capnodes fabularis, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 257 ; *C. lura*, Panama, p. 414, pl. xxxiii, fig. 23, *laranda*, Centr. America, p. 415, *alceste*, fig. 24, *alcinoe*, fig. 25, *lappa*, fig. 26, p. 417, *C. (?) argina*, fig. 27, p. 418, Panama, DRUCE, Biol. Centr. Am. Heter. i ; *C. astyla*, p. 215,

prisca, *priscilla*, p. 216, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi ; *C. maculifera*, Peru, MAASSEN, in Stübel Reise, p. 152, pl. vii, fig. 17 : n. spp.

Caradrina calberla, Sicily, FAILLA-TEDALDI, Nat. Sicil. x, p. 29 ; *C. alana*, Panama, DRUCE, p. 513, P. Z. S. 1890 ; *C. promiscua*, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 144 ; *C. tolima*, pl. vi, fig. 15, *C. ? dubitata*, fig. 22, Colombia, p. 141, *C. mendica*, fig. 17, *bilineata*, fig. 18, Ecuador, p. 142, MAASSEN, in Stübel Reise : n. spp.

Carneades atristrigata, p. 150, *misturata* (Morr.), p. 156, *neomexicana*, p. 218, *teleboa*, *lineifrons*, p. 219, *pedalis*, p. 220, *xyliniformis*, *conjuncta*, p. 221, *perturbata*, p. 222, N. America, SMITH, Bull. U. S. Nat. Mus. No. 38, n. spp.

Carthara reissi, Colombia, MAASSEN, in Stübel Reise, p. 132, pl. v, fig. 6, n. sp.

Catephia melanis, W. Africa, MABILLE, p. 43, Ann. Soc. Ent. Fr. (6) x, n. sp.

Catocala electilis figured, pl. xxxi, fig. 8, Biol. Centr. Am. Heter. i. *C. frazzini*, larva described ; PORRITT, Ent. M. M. (2) i, p. 125.

C. ixion, Mexico, DRUCE, p. 360, pl. xxxi, fig. 2, Biol. Centr. Am. Heter. i, n. sp.

✓ *Cecharismena*, n. g., placed near *Thalpochares*, p. 164, for *T. nectared*, p. 165, *cara*, p. 166, n. spp., Portorico ; MÖSCHLER, Abh. Senck. Ges. xvi.

Celæna ? *lilacina*, Panama, DRUCE, p. 512, P. Z. S. 1890, n. sp.

Chamina (?) *lamponia*, Panama, DRUCE, p. 422, pl. xxxiv, fig. 2, Biol. Centr. Am. Heter. i, n. sp.

Chasmina alcidamea, Guatemala, DRUCE, P. Z. S. 1890, p. 512, n. sp.

✓ *Chorizagrotis*, n. g., for part of *Agrotis* ; SMITH, p. 98, Bull. U. S. Nat. Mus. No. 38.

Cleophana jubata, Gabès, OBERTHUR, p. 31, pl. vi, fig. 40, Études d'Ent. xiii, n. sp.

Cletthora mirabilis, *bilinea*, Rangoon, SWINHÖE, Tr. E. Soc. 1890, p. 237, n. spp.

Cænipeta dimidiata, Butl., figured, pl. xxxi, fig. 10, Biol. Centr. Am. Heter. i.

C. æolia, Central America, DRUCE, t. c. p. 350, pl. xxxi, fig. 9 ; *C. zenobina*, p. 148, pl. vii, fig. 5, *ocellata*, p. 149, fig. 9, Colombia, MAASSEN, in Stübel Reise : n. spp.

✓ *Collomena*, n. g., position doubtful, for *C. elota*, n. sp., Portorico, pl., fig. 17 ; MÖSCHLER, p. 145, Abh. Senck. Ges. xvi.

Copipanolis stigma, Florida, SMITH, Ent. Am. vi, p. 220, n. sp.

Cosmia laoripa, Panama, DRUCE, P. Z. S. 1890, p. 514, n. sp.

Crymodes exulis, Icelandic varr. noticed ; WALKER, P. E. Soc. 1890, p. xxxiii.

✓ *Cuspidia*, n. subg. of *Acronycta* ; CHAPMAN, Ent. Rec. i, p. 27.

Daxata multifasciata, Rangoon, SWINHÖE, Tr. E. Soc. 1890, p. 256, pl. vii, fig. 14, n. sp.

Decalea infusa, Wlk., fully described ; MÖSCHLER, p. 203, Abh. Senck. Ges. xvi.

- Declana floccosa*, life-history ; HUDSON, Ent. xxiii, p. 241.
- Dianthæcia carpophaga* and *capsophila*, identity of ; BLANDFORD, Ent. M. M. (2) i, p. 89 ; SOUTH, Ent. xxiii, p. 132.
- D. magellana*, Patagonia, MABILLE, N. Arch. Mus. (3) i, p. 152, n. sp.
- Diasterna*, F. & R., described ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 161.
- D. flavicapilla*, Antilles and S. America, MÖSCHLER, p. 162, Abh. Senck. Ges. xvi, n. sp.
- Diatenes merulina*, Madagascar, MABILLE, p. 42, Ann. Soc. Ent. Fr. (6) x, n. sp.
- Dyomyx junco*, Portorico, MÖSCHLER, p. 197, Abh. Senck. Ges. xvi, n. sp.
- Dyschorista*, synonymical observations ; BUTLER, p. 96, Ann. N. H. (6) vi.
- D. crenulata*, N. America, *lanaris*, Brazil, BUTLER, p. 97, Ann. N. H. (6) vi, n. spp.
- Egnasia igneola*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 254, n. sp.
- Emmelia variegata*, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 156, n. sp.
- ↓ *Encalypta*, n. g., position doubtful, p. 147, for *E. schillei*, n. sp.; Portorico, p. 148, pl., fig. 23 ; MÖSCHLER, Abh. Senck. Ges. xvi.
- Ephyrodes similis*, pl. xxxiii, fig. 17, *læna*, fig. 18, Centr. America, DRUCE, Biol. Centr. Am. Heter. i, p. 409, n. spp.
- Epidromia pannosa*, Gn., = (*rotundata*, H. S.) ; MÖSCHLER, p. 211, Abh. Senck. Ges. xvi.
- Episema hispana*, pl. vi, fig. 42, with var. *albida*, fig. 43, figured ; OBERTHUR, Études d'Ent. xiii.
- E. datini*, N. Africa, OBERTHUR, p. 30, pl. vi, fig. 38, Études d'Ent. xiii, n. sp.
- Eriopus elegantulus*, H. S., full description ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 132.
- Euclidia annexa*, Oregon, EDWARDS, Ent. Am. vi, p. 115, n. sp.
- ✓ *Eueretagrotes*, n. g., for part of *Agrotis* ; SMITH, p. 47, Bull. U. S. Nat. Mus. No. 38.
- ✓ *Eulaphygma*, n. g., for a part of *Laphygma* ; BUTLER, Tr. E. Soc. 1890, p. 668.
- Euperia nagaloo*, Fiji Is. ; MABILLE & VUILLOT, Nov. Lep. p. 8, pl. i, fig. 7.
- Eurhipia rosea*, Congo, MABILLE, Nov. Lep. p. 6, pl. i, fig. 4, n. sp.
- Eustrotiini*, notes on the N. American ; GROTE, Ent. Am. vi, pp. 161-165.
- Exophila flexuaria*, W. Africa, MABILLE, p. 40, Ann. Soc. Ent. Fr. (6) x, n. sp.
- Feltia pectinicornis*, p. 114. *longidens*, p. 217, N. America, SMITH, Bull. U. S. Nat. Mus. No. 38, n. spp.
- Feralia major*, Washington, SMITH, Ent. Am. vi, p. 26, n. sp.
- Focilla recurva* figured, pl. xxxiii, fig. 2, Biol. Centr. Am. Heter. i.
- F. (?) laba*, 392, pl. xxxiii, fig. 3, *labecia*, fig. 4, Guatemala, *maxima*,

fig. 5, p. 393, *agava*, fig. 6, Panama, *locæna*, *lala*, fig. 7, p. 394, Guatemala, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

✓*Freilla*, n. g. (*Thermesiidæ*, near *Ephyrodæ*), for *F. variabilis*, pl. xxxiii, fig. 19, *humeralis*, fig. 20, n. spp., Centr. America ; DRUCE, p. 410, Biol. Centr. Am. Heter. i.

Galapha ageta, Centr. America, DRUCE, p. 396, pl. xxxiii, fig. 8, Biol. Centr. Am. Heter. i, n. sp.

Glæa spadicea and *vaccinii*, larvæ of ; CHAPMAN, Ent. M. M. (2) i, p. 86.

Gonitis brunnea, Moore, referred to *Rusicada*, ♀ described, p. 230 ; figured, pl. viii, fig. 2 ; SWINHOE, Tr. E. Soc. 1890.

G. virida, Java, HEYLAERTS, C.R. Ent. Belg. 1890, p. xxx, n. sp.

Gortyna nitela, larva described ; BLAKE, Ent. News, i, p. 136.

Hadena chalconia, Hb., = (*Alibama mutata*, Möschl.) ; MÖSCHLER, p. 127, Abh. Senck. Ges. xvi. *H. trita*, *pupula*, referred to *Perigea*, characters of allies ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 134.

H. engelhartii, Jutland, DUURLOO, Ent. Med. ii, p. 86 ; *H. disgrega*, p. 128, *ligata*, p. 130, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi ; *H. juvenilis*, pl. vi, fig. 30, *ignitincta*, fig. 26, Ecuador, p. 145, *nun*, pl. vii, fig. 7, *albesignata*, fig. 11, Bolivia, p. 146, MAASSEN, in Stübel Reise : n. spp.

Hamodes unilinea, Burma, SWINHOE, Tr. E. Soc. 1890, p. 243, n. sp.

✓*Haplostola*, n. g., placed before *Mesostrola*, p. 163, for *H. aphelioides*, n. sp., Portorico, p. 163 ; MÖSCHLER, Abh. Senck. Ges. xvi.

Hecatera lata, Ecuador, MAASSEN, in Stübel Reise, p. 145, pl. vi, fig. 29, n. sp.

Helia lampetia, Panama, DRUCE, p. 403, pl. xxxiii, fig. 11, Biol. Centr. Am. Heter. i, n. sp.

Heliophobus hispidus, varietal note ; RICHARDSON, Ent. xxiii, p. 60 : larva described ; BROWN, Ent. Rec. i, p. 43.

Heliothis variabilis, W. Africa, MABILLE, p. 39, Ann. Soc. Ent. Fr. (6) x, n. sp.

✓*Hemicephalis*, n. g., for *Glottula characteria*, Wlk. ; MÖSCHLER, p. 174, Abh. Senck. Ges. xvi.

Hemiceras carmelita, Colombia, pl. vii, fig. 4, *postica*, Ecuador, fig. 3, MAASSEN, in Stübel Reise, p. 148 ; cf. also *Notodontidæ* : n. spp.

Herrichia cervina, N. America, EDWARDS, Ent. Am. vi, p. 114, n. sp.

✓*Heteromorpha*, n. g., near *Orrhodia*, for *H. ragusæ*, n. sp., Sicily, pl. i, fig. 6 ; FAILLA-TEDALDI, Nat. Sicil. x, p. 30.

Homoptera fictilis, Gn., = (*guadalupensis*, Gn.) ; MÖSCHLER, p. 205, Abh. Senck. Ges. xvi.

H. amata, Panama, DRUCE, p. 345, pl. xxxi, fig. 4, Biol. Centr. Am. Heter. i, n. sp.

Hypatra ocularia, Burma, SWINHOE, Tr. E. Soc. 1890, p. 246, pl. viii, fig. 4, n. sp.

Hypanaria augusta, variation and numerous synonyms noticed ; DRUCE, p. 420, Biol. Centr. Am. Heter. i.

H. (?) umbrigena, Panama, DRUCE, p. 421, pl. xxxiv, fig. 1, Biol. Centr. Am. Heter. i, n. sp.

Ingura elegans, p. 170, *vittata*, p. 171, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. spp.

Isogona æolia, Centr. America, DRUCE, p. 390, pl. xxxiii, fig. 1, Biol. Centr. Am. Heter. i, n. sp.

✓*Krugia*, n. g., placed next *Mesostrota*, p. 163, for *K. operata*, n. sp., Portorico, p. 164, MÖSCHLER, Abh. Senck. Ges. xvi.

Laphygma angustipennis n. var. *divida*; MÖSCHLER, Abh. Senck. Ges. xvi, p. 124.

✓*Leianophera*, n. g., near *Gortyna*, for *L. transfossa*, n. sp., Portorico, pl. fig. 16; MÖSCHLER, p. 136, Abh. Senck. Ges. xvi.

Lepidodes (?) *ænyra*, Panama, DRUCE, p. 348, pl. xxxi, fig. 6, Biol. Centr. Am. Heter. i, n. sp.

Letis vultura, p. 370, pl. xxxii, figs. 1 & 2, *orcynia*, p. 371, figs. 4 & 7, Centr. America, DRUCE, Biol. Centr. Am. Heter. i; *L. caligula*, Ecuador, MAASSEN, in Stübel Reise, p. 150, pl. vii, fig. 10 : n. spp.

Leucania commoides, Gn., = (*secta*, H. S.); MÖSCHLER, Abh. Senck. Ges. xvi, p. 141.

L. albivenata, p. 217, pl. vii, fig. 7, *subnitens*, p. 218, fig. 1, *nefasta*, *homopterana*, fig. 12, p. 219, *basilinea*, p. 220, fig. 6, Burma, SWINHOE, Tr. E. Soc. 1890; *L. aureola*, p. 1097, *fumata*, p. 1098, Brisbane, LUCAS, P. Linn. Soc. N.S.W. (2) iv; *L. senescens*, p. 142, *clarescens*, p. 143, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi; *L. strigata*, p. 137, pl. vi, fig. 5, *arcupunctata*, fig. 1, *kirschii*, fig. 2, *lineolata*, fig. 4, *lucentia*, fig. 12, p. 138, *badia*, fig. 6, p. 139, Ecuador, *bilinea*, fig. 9, p. 139, Bolivia, MAASSEN, in Stübel Reise : n. spp.

Luperina (*Hadena*) *stipata*, Morr., habits of larva; WEBSTER, p. 47, Bull. Dep. Agric. Ent. xxii.

Lygniodes plateni, Palawan, PAGENSTECHE, Deutsche e. Z. Lep. iii, p. 18, n. sp.

Magusa apicimacula, Ecuador, MAASSEN, in Stübel Reise, p. 147, pl. vii, fig. 2, n. sp.

Mamestra parvula var. = (*distributa*, Möschl.); MÖSCHLER, p. 135, Abh. Senck. Ges. xvi. *M. brassica* var. *straminea*; FAILLA-TEDALDI, Nat. Sicil. x, p. 30. *M. confusa*, larva described; DYAR, Ins. Life, iii, p. 63. *M. lorea*, larva described; BEUTENMÜLLER, Canad. Ent. xxii, p. 16.

M. renati, Pyrenees, OBERTHUR, Bull. Soc. Ent. Fr. 1890, p. clxxxvii; *M. calographa*, p. 140, pl. vi, fig. 8, *imitata*, fig. 31, Ecuador, *scripta*, fig. 14, Bolivia, p. 141, MAASSEN, in Stübel Reise : n. spp.

Marmorinia curviluna, Centr. America, DRUCE, p. 411, pl. xxxiii, fig. 1, Biol. Centr. Am. Heter. i, n. sp.

Massala larina, Guatemala, DRUCE, p. 413, pl. xxxiii, fig. 22, *t. c.*, n. sp.

Mecyna polygonalis, habits in New Zealand; SMITH, Ent. M. M. (2) i, p. 51; MEYRICK, *t. c.* p. 87; SMITH, *t. c.* p. 218. *M. deprivalis*, habits in New Zealand; SMITH, Ent. M. M. (2) i, p. 218.

Melipotis imparallela, fig. 13, *marmoraris*, fig. 15, figured, pl. xxxi, Biol. Centr. Am. Heter. i.

Mesostrata imprimata, Portorico, MÖSCHLER, p. 163, Abh. Senck. Ges. xvi, n. sp.

Metalectra agathia, Centr. America, pl. xxxiii, fig. 12, *aglaia*, p. 404, *lacerta*, *lineata*, Mexico, *lampea*, Costa Rica, *M.* (?) *agilaria*, Guatemala, p. 405, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Metapopneumata, n. g. (position not mentioned), for *M. rogenhoferi*, n. sp., Portorico; MÖSCHLER, p. 159, Abh. Senck. Ges. xvi.

Metopoceras maritima, Sicily, FAILLA-TEDALDI, Nat. Sicil. x, p. 31, pl. i, fig. 8, n. sp.

Moma equatoria figured and described; MABILLE & VUILLOT, Nov. Lep. p. 6, pl. i, fig. 3.

M. hieroglyphera, Ecuador, MAASSEN, in Stübel Reise, p. 137, pl. v, fig. 17, n. sp.

Morrisonia rileyana, Florida, SMITH, Ent. Am. vi, p. 212, n. sp.

Nagadeba ianthina, Rangoon, SWINHÖE, Tr. E. Soc. 1890, p. 255, n. sp.

Nonagria lineosa, p. 139, pl. vi, fig. 3, *monilis*, p. 140, fig. 10, Ecuador, MAASSEN, in Stübel Reise, n. spp.

Oncocnemis extremis, British Columbia, SMITH, Ent. Am. vi, p. 30, n. sp.

Ophideres princeps, Guen., = (*benacus*, Plötz); MABILLE, p. 44, Ann. Soc. Ent. Fr. (6) x. *O. salamina*, Cr., figured, pl. xi, SCOTT, Austr. Lep. ii. *O. serpentifera* figured, pl. xxxi, fig. 14, Biol. Centr. Am. Heter. i.

Ophisma ablunaris n. var. *hilaris*; MÖSCHLER, p. 202, Abh. Senck. Ges. xvi. *O. æolida*, Panama, DRUCE, p. 380, pl. xxxii, fig. 9, Biol. Centr. Am. Heter. i, n. sp.

Ophiusa orthæa, W. Africa, MABILLE, p. 44, Ann. Soc. Ent. Fr. (6) x, n. sp.

Orsa (?) *agola*, Panama, DRUCE, p. 423, pl. xxxiv, fig. 3, Biol. Centr. Am. Heter. i, n. sp.

Orthogramma (?) *lamida*, Centr. America, p. 399, pl. xxxiii, fig. 10, Biol. Centr. Am. Heter. i, n. sp.

Orthosia witzmanni, Basses Alpes, STANDFUSS, MT. Schw. ent. Ges. viii, p. 233; *O. purilinea*, Patagonia, MABILLE, N. Arch. Mus. (3) i, p. 152 : n. spp.

Orthosoma valdiviesoi, Loja, DOGNIN, Le Nat. xii, p. 193, n. sp.

Pachnobia ferruginoides, N. America; SMITH, p. 56, Bull. U. S. Nat. Mus. No. 38, n. sp.

Palindia variabilis, p. 194, *hebe*, p. 195, *dewitzii*, p. 196, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. spp.

Penicillaria subrubens, W. Africa, MABILLE, p. 40, Ann. Soc. Ent. Fr. (6) x; *P. cuprea*, Portorico and Surinam; MÖSCHLER, p. 179, Abh. Senck. Ges. xvi : n. spp.

Peosina numeria, Dr., fully described; MÖSCHLER, p. 207, Abh. Senck. Ges. xvi.

Peridroma tenuescens, Nebraska, SMITH, p. 73, Bull. U. S. Nat. Mus. No. 38, n. sp.

Perigea agnonia, Centr. and S. America, DRUCE, p. 513, P. Z. S. 1890, n. sp.

✓ *Perigonica*, n. g., near *Teniocampa*, p. 123, for *P. angulata*, California, *fulminans*, Colorado, p. 124, n. spp.; SMITH, Ent. Am. vi.

Phosphila exonia, Panama, DRUCE, p. 349, pl. xxxi, fig. 7, Biol. Centr. Am. Heter. i, n. sp.

Phuryx enervis, Rangoon, SWINHOE, p. 231, pl. viii, fig. 8, n. sp.

Placodes decolor, Ecuador, MAASSEN, in Stübel Reise, p. 147, pl. vii, fig. 8, n. sp.

Plagiomimicus triplagiatus, Mexico, SMITH, Ent. Am. vi, p. 139, n. sp.

✓ *Platagrotis*, n. g., for part of *Agrotis*; SMITH, p. 43, Bull. U. S. Nat. Mus. No. 38.

✓ *Pleurasympieza*, n. g., position doubtful, p. 146, for *P. smithii*, n. sp., Portorico, p. 147, pl., fig. 18; MÖSCHLER, Abh. Senck. Ges. xvi.

Plusia rogationis, Gn., = (*pertusa*, Mösch.); MÖSCHLER, Abh. Senck. Ges. xvi, p. 181. *P. moneta*, notes on distribution; FALLOU, Bull. Soc. Ent. Fr. 1890, p. ccxii. *P. californica*, preparatory stages; DYAR, Ent. Am. vi, p. 14. *P. iota*, food-plants; SOUTH, Ent. xxiii, p. 204.

Plusia sica, Amurland, GRAESER, B. E. Z. xxxv, p. 77; *P. anda*, Guatemala, DRUCE, P. Z. S. 1890, p. 518 : n. spp.

Plusiodes ? *laronia*, p. 518, *agenoria*, *alesia*, p. 520, Centr. and S. America, *laodamia*, Mexico, p. 520, DRUCE, P. Z. S. 1890, n. spp.

Poaphila erubescens, Ecuador, MAASSEN, in Stübel Reise, p. 150, pl. vii, fig. 12, n. sp.

Polia humilis, Bl., probably = (*Agrotis dianthæciæ*, Mab.); BERG, p. clxx, Bull. Soc. Ent. Fr. 1890.

P. ? lorina, Mexico, *ameria*, Guatemala, DRUCE, p. 515, P. Z. S. 1890, n. spp.

Polydesma exarata, W. Africa, MABILLE, p. 42, Ann. Soc. Ent. Fr. (6) x, n. sp.

Polyphaenis nona, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 131, n. sp.

✓ *Porosagrotis*, n. g., for part of *Agrotis*, p. 123, with *P. dedalus*, n. sp., N. America, SMITH, p. 217, Bull. U. S. Nat. Mus. No. 38.

Prodenia pulchella, H. S., = (*exquisita*, Mösch.), p. 125, *testaceoides*, Gn., redescribed, p. 126; MÖSCHLER, Abh. Senck. Ges. xvi.

P. uncifera, Ecuador, MAASSEN, in Stübel Reise, p. 140, pl. vi, fig. 11, n. sp.

Prometopus, Gn., referred to *Cymatophoridae*, *P. inassueta*, Gn., = (*Bryophila dorsivaria*, Wlk.); BUTLER, Tr. E. Soc. 1890, p. 653.

P. equigureni, Loja, DOGNIN, Le Nat. xii, p. 176, n. sp.

✓ *Pseudepunda*, n. g., for *Epunda bicolor*, Moore; BUTLER, Tr. E. Soc. 1890, p. 672.

✓ *Pseudocalpe*, n. g., placed next *Penicillaria*, for genus ? *tristriga*, H. S.; MÖSCHLER, p. 179, Abh. Senck. Ges. xvi.

✓ *Pseudohemiceras*, n. g., placed near *Eurhipia*, for *P. krugii*, n. sp., Portorico; MÖSCHLER, p. 176, Abh. Senck. Ges. xvi.

Pseudophia tungusa, Amurland, GRAESER, B. E. Z. xxxv, p. 78, n. sp.

Ramphia albizona and *evinga* treated as sexes of one species; DRUCE, p. 368, Biol. Centr. Am. Heter. i.

R. daemon, Peru, MAASSEN, in Stübel Reise, p. 149, pl. vii, fig. 15, n. sp.
Remigia diffluens, variation and synonymy noticed; DRUCE, p. 388, Biol. Centr. Am. Heter. i.

†*Rhizagrotis*, n. g., for part of *Agrotis*; SMITH, p. 103, Bull. U. S. Nat. Mus. No. 38.

Rhosologia porrecta figured, pl. xxxii, fig. 11, Biol. Centr. Am. Heter. i.

†*Rhynchagrotis*, n. g., for part of *Agrotis*, including *R. distracta*, n. sp., N. America, p. 36; SMITH, p. 13, Bull. U. S. Nat. Mus. No. 38.

Safia ania, Panama, DRUCE, p. 347, pl. xxxi, fig. 5, Biol. Centr. Am. Heter. i, n. sp.

Sarothroceras alluaudi figured and described; MABILLÉ, Nov. Lep. p. 4, pl. i, fig. 6: referred to *Hypsida*; *id.* p. 37, Ann. Soc. Ent. Fr. (6) x.

Scopelosoma, revision of the N. American species; SMITH, Ent. Am. vi, pp. 146–153.

Scotogramma phoca, Mösch., = (*M. promulsa*, Morr.); SMITH, P. U. S. Nat. Mus. xii, p. 463.

Selenis portoricensis, Portorico, MÖSCHLER, p. 214, Abh. Senck. Ges. xvi; *S. agarrha*, pl. xxxiii, fig. 13, *agna*, fig. 14, p. 407, *lacia*, fig. 15, *laonome*, fig. 16, p. 408, Centr. America, DRUCE, Biol. Centr. Am. Heter. i; *S. vittata*, Colombia, MAASSEN, in Stübel Reise, p. 151, pl. vii, fig. 18: n. spp.

Selepa curiosa, Rangoon, SWINHOE, p. 236, Tr. E. Soc. 1890, n. sp.

†*Setagrotis*, n. g., for part of *Agrotis*, SMITH, p. 59, Bull. U. S. Nat. Mus. No. 38.

Sinna dohertyi, Naga Hills, ELWES, p. 400, pl. xxxiii, fig. 5, P. Z. S. 1890, n. sp.

Spalotis uniformis, Burma, SWINHOE, Tr. E. Soc. 1890, p. 226, n. sp.

Stilbia anomala, var. or n. sp.?, described, FAILLA-TEDALDI, Nat. Sicil. x, p. 29, pl. i, fig. 3.

Syllectra lucifer, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 210, n. sp.

Symitha punctata, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 236, pl. vii, fig. 15, n. sp.

Sympis agnita, Panama, DRUCE, Biol. Centr. Am. Heter. i, p. 398, pl. xxxiii, fig. 9, n. sp.

†*Synvaleria*, n. g., for *Valeria jaspidea*, Vill.; BUTLER, Tr. E. Soc. 1890, p. 672.

Sypna æxonia, Mexico, DRUCE, p. 367, pl. xxxii, fig. 3, Biol. Centr. Am. Heter. i, n. sp.

Tæniocampa and allied N. American genera, revision of, with figs. of the male characters; SMITH, P. U. S. Nat. Mus. xii, pp. 455–496, pls. xxii & xxiii.

T. modifica, Morr., = (*consopita*, Grt.), p. 480, *alia* and *incerta* distinguished, p. 487; SMITH, P. U. S. Nat. Mus. xii. *T. opima*, notes on; ARKLE, Ent. xxiii, p. 307.

T. carminata, Colorado, p. 121, *curtica*, *addenda*, California, p. 122, *venata*, N. York, p. 123, EDWARDS, Ent. Am. vi, n. spp.

Tarache bætica, optiva, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 224, n. spp.

Tautobriga euspila, Wlk., = (*Amphigonina erythropus*, Feld.) ; DRUCE, Biol. Centr. Am. Heter. i, p. 395.

Thalera chlorosaria, Amurland, GRAESER, B. E. Z. xxxv, p. 81, n. sp.

Thalpochara rosea, n. var. *schernhammeri*, RÜHL, Soc. Ent. v, p. 34.

T. albipectus, grapholithoides, p. 167, *putnami*, p. 168, *basalis*, p. 169, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi ; *T. laronia*, p. 516, *lagore*, p. 517, Centr. America, DRUCE, P. Z. S. 1890 ; *T. partitella*, Peru, MAASSEN, in Stübel Reise, p. 147, pl. ix, fig. 27 ; n. spp.

Thermesia gemina, Colombia, MAASSEN, in Stübel Reise, p. 151, pl. vii, fig. 14, n. sp.

Thysania tiasa, Costa Rica, DRUCE, p. 374, pl. xxxii, fig. 10, Biol. Centr. Am. Heter. i, n. sp.

Toxocampa limosa n. var. *nigricostata* ; GRAESER, B. E. Z. xxxv, p. 80.

T. lupina, Amurland, GRAESER, B. E. Z. xxxv, p. 79, n. sp.

↓ *Toxonprucha*, n. g., near *Hypogramma*, for *T. amœna*, n. sp., Portorico, pl., fig. 1 ; MÖSCHLER, p. 198, Abh. Senck. Ges. xvi.

Trigonodes hemidelta, Zanzibar, MABILILE, p. 46, Ann. Soc. Ent. Fr. (6) x, n. sp.

Vespola cæruleifera figured, pl. xxxi, fig. 12, Biol. Centr. Am. Heter. i.

↓ *Viminia*, n. subg. of *Acranycta* ; CHAPMAN, Ent. Rec. i, p. 26.

Xanthia gilvago var. described ; FAILLA-TEDALDI, Nat. Sicil. x, p. 29.

X. alala, p. 514, *alcandra*, p. 515, Mexico, DRUCE, P. Z. S. 1890, n. spp.

Xanthoptera laphyra, Centr. America, DRUCE, p. 517, P. Z. S. 1890 ;

X. tripuncta, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 158 ; n. spp.

Xylina violascens, Ecuador, MAASSEN, in Stübel Reise, p. 146, pl. vii, fig. 1, n. sp.

Xylis setipes, Gn., fully described ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 202.

Xylophasia offuscata, Berg, = (*Calophasia bicolor*, Mab.) ; BERG, p. clxx, Bull. Soc. Ent. Fr. 1890.

Ypsia lineata, Centr. America, DRUCE, p. 346, Biol. Centr. Am. Heter. i, n. sp.

Zethes mopsa, compactilis, pl. vii, fig. 16, p. 251, *palliolata*, pl. viii, fig. 10, p. 252, *umbriifera, exiguialis*, pl. vii, fig. 8, p. 253, Burma, SWINHOE, Tr. E. Soc. 1890, n. spp.

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[Cf. DRUCE (317), MÖSCHLER (558), SNELLEN (821), SOUTH (825), SWINHOE (838), WEYMER & MAASSEN (911).]

↓ *Aglaonice*, n. g., p. 226, for *A. snelleni*, n. sp., Portorico, p. 227 ; MÖSCHLER, Abh. Senck. Ges. xvi.

Anagoa limatalis, nigromaculalis, p. 218, *placidalis*, p. 219, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. spp.

Apphadana plana, Burma, SWINHOE, Tr. E. Soc. 1890, p. 261, n. sp.

✓ *Armana*, n. g. (*Remigiidæ*), for *A. nigrærieta*, n. sp., Burma, pl. viii, fig. 1; SWINHOE, p. 250, Tr. E. Soc. 1890.

Bertula agrestis, p. 262, *ethnica*, pl. viii, fig. 1, *factitia*, *analis*, fig. 5, p. 263, Burma, SWINHOE, Tr. E. Soc. 1890, n. spp.

Bleptina subjecta, Portorico, MÖSCHLER, p. 226, Abh. Senck. Ges. xvi, n. sp.

Bocana nigella, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 265, n. sp.

Dyrzela bosca, Burma, SWINHOE, Tr. E. Soc. 1890, p. 266, n. sp.

Gustiana libitina, p. 425, pl. xxxv, fig. 1, *limæa*, fig. 2, p. 426, Mexico, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Hadenia ignicomma, Rangoon, SWINHOE, p. 264, pl. viii, fig. 12, Tr. E. Soc. 1890, n. sp.

Hipoëpa ? *opacaria*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 264, pl. viii, fig. 3, n. sp.

✓ *Hormoschista*, n. g., for *H. pagenstecheri*, n. sp., Portorico, pl., fig. 3; MÖSCHLER, Abh. Senck. Ges. xvi, p. 221.

Hygena manalis, pl. xxxiv, fig. 5, *pilosalis*, fig. 6, *vetustalis*, fig. 23, *dispunctalis*, fig. 24, *securalis*, fig. 25, *pacificalis*, fig. 26, *exceptalis*, pl. xxxv, fig. 6, *jactatalis*, fig. 21, figured; Biol. Centr. Am. Heter. i.

H. invenustalis, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 260; *H. conditalis*, p. 222, Portorico, *cervinalis*, p. 223, Jamaica, *vinculalis*, p. 224, *incertalis*, p. 225, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi; *H. franciscalis*, p. 152, pl. vii, fig. 20, *amicalis*, p. 153, fig. 19, Ecuador, MAASSEN, in Stübel Reise; *H. andraca*, pl. xxxiv, fig. 7, *lua*, fig. 8, p. 428, *variabilis*, figs. 9–20, *livia*, fig. 21, *anemosa*, fig. 22, p. 429, *lanassa*, fig. 27, p. 430, *andria*, pl. xxxv, fig. 4, *levana*, fig. 5, *andrapana*, fig. 7, *lebonia*, fig. 8, *ammonia*, fig. 9, p. 432, *ancara*, fig. 10, *lipara*, fig. 11, p. 433, *androna*, fig. 12, *anicina*, fig. 13, p. 434, *leuctra*, fig. 14, *loxo*, fig. 15, *anda*, fig. 16, *lollia*, fig. 17, p. 435, *locusta*, fig. 18, *muscosa*, fig. 19, *H. (P) angitia*, fig. 20, p. 436, Centr. America, DRUCE, Biol. Centr. Am. Heter. i : n. spp.

Hygenodes costæstrigalis and *tænalis*, figured, pl. vii, with larva of latter described with full synonymy, pp. 163–177; SNELLEN, Tijdschr. Ent. xxxiii.

H. pudicalis, pl. vii, fig. 9, *minimalis*, fig. 10, p. 178, *obliquialis*, fig. 11, p. 179, Java, SNELLEN, Tijdschr. Ent. xxxiii : n. spp.

✓ *Lophoditta*, n. g., p. 230, near *Physula*, for *L. perspicillaris*, n. sp., Portorico, p. 231, and *Physula tuberculata*, H. S.; MÖSCHLER, Abh. Senck. Ges. xvi.

✓ *Lophophora*, n. g., near *Clanyma*, p. 227, for *L. clanymoides*, n. sp., Antilles, p. 228, pl., fig. 4; MÖSCHLER, Abh. Senck. Ges. xvi.

Macrodes leyna, Panama, DRUCE, p. 424, pl. xxxiv, fig. 4, Biol. Centr. Am. Heter. i, n. sp.

Mastigophora demissalis, Portorico, MÖSCHLER, p. 233, Abh. Senck. Ges. xvi, n. sp.

✓ *Metallata*, n. g., p. 219, for *M. variabilis*, n. sp., Antilles and Centr. America, p. 220; MÖSCHLER, Abh. Senck. Ges. xvi.

✓ *Metina*, n. g., near *Hygena*, for *Bleptina hirtipalpis*, Wlk.; DRUCE, p. 437, Biol. Centr. Am. Heter. i.

✓ *Oglasa costipannosa*, Burma, SWINHOE, Tr. E. Soc. 1890, p. 266, n. sp.
 ✓ *Ogoas*, n. g. (*Hypenidæ*), for *O. albipuncta*, n. sp., Guatemala, pl. xxxv, fig. 24 ; DRUCE, p. 439, Biol. Centr. Am. Heter. i.

✓ *Phlyctaina*, n. g., near *Aristaria*, p. 228, for *P. irrigualis*, n. sp., Portorico, p. 229 ; MÖSCHLER, Abh. Senck. Ges. xvi.

Physula peckii, Portorico, MÖSCHLER, p. 232, Abh. Senck. Ges. xvi, n. sp.

Pseudoglossa modesta, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 261, n. sp.

Pterhemia ameriola, Panama, DRUCE, p. 426, pl. xxxv, fig. 3, Biol. Centr. Am. Heter. i, n. sp.

Rivula pusilla, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 234, n. sp.

✓ *Scelescepon*, n. g., for *S. mutatalis*, n. sp., Portorico ; MÖSCHLER, p. 230, Abh. Senck. Ges. xvi.

Simplicia (?) *monacha*, Colombia, MAASSEN, in Stübel Reise, p. 153, pl. vii, fig. 16, n. sp.

✓ *Sisputa*, n. g., for *S. gracilis*, n. sp., Antilles and S. America, pl., fig. 10 ; MÖSCHLER, p. 222, Abh. Senck. Ges. xvi.

✓ *Sotigena*, n. g., near *Hypena*, p. 437, for *S. notodontoides*, pl. xxxv, fig. 22, *dulcis*, fig. 23, n. spp., Mexico, p. 438 ; DRUCE, Biol. Centr. Am. Heter. i.

✓ *Tomyris*, n. g. (*Hypenidæ*), for *T. nigropuncta*, n. sp., Centr. America, pl. xxxv, fig. 25 ; DRUCE, p. 440, Biol. Centr. Am. Heter. i.

Zanclognatha invenustua, Rangoon, SWINHOE, Tr. E. Soc. 1890, pl. viii, fig. 9, n. sp.

Z. oculatalis, Portorico, MÖSCHLER, p. 225, Abh. Senck. Ges. xvi, n. sp.

GEOMETRIDÆ.

[Cf. CALVERT (108), DOGNIN (177), GRAESER (322), GUMPPENBERG (336), LUCAS (493, 494), MABILLE (476, 496), MERRIFIELD (528), MEYRICK (535, 537), MÖSCHLER (558), OBERTHUR (575), PAGENSTECHE (594), RÄTZER (641), SNELLEN (822), SWINHOE (838), WEYMER & MAASSEN (911).]

List of *Geometridæ* of the Campagna, Rome, with many descriptions of varieties ; CALBERLA, Deutsche e. Z. Lep. iii, pp. 47-94.

Abraxas perampla, Burma, SWINHOE, Tr. E. Soc. 1890, p. 211, n. sp.

Acidalia amænaria, Sumatra, SNELLEN, Tijdschr. Ent. xxxiii, p. 222 ; *A. tortuosaria*, *flavomarginata*, *opulentaria*, p. 237, *offendata*, p. 238, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi ; *A. quinquelineata*, p. 10, *nigromarginata*, p. 19, *adela*, p. 38, *jerana*, p. 73, Zamora, *concolaria*, Loja, p. 19, DOGNIN, Le Nat. xii : n. spp.

Angerona figlina, Burma, SWINHOE, Tr. E. Soc. 1890, p. 205, pl. vii, fig. 5, n. sp.

Anisodes rapistriaria, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 210, pl. vii, fig. 9, n. sp.

✓ *Apallacta*, n. g., placed next *Syllexis*, p. 241, for *A. pyrrhularia*, n. sp., Portorico, p. 242 ; MÖSCHLER, Abh. Senck. Ges. xvi.

† *Argia*, n. subg. of *Acidalia*; GUMPPENBERG, p. 492, N. Acta Ac. L.-C. Nat. cur. liv.

Aspilates chordota, Melbourne, MEYRICK, p. 1196, P. Linn. Soc. N.S.W. (2) iv; *A. ? niveipennaria*, Bolivia, MAASSEN, in Stübel Reise, p. 162, pl. ix, fig. 16 : n. spp.

Azelina jimenezaria, Loja, DOGNIN, Le Nat. xii, p. 193; *A. griseata*, Colombia, p. 156, pl. viii, fig. 7, *tabitha*, Ecuador, fig. 8, p. 157, MAASSEN, in Stübel Reise : n. spp.

Biston hirtaria, habits noticed; BARRETT, Ent. M. M. (2) i, p. 157.

Boarmia crassestrigata n. var. *discreparata*; GRAESER, B. E. Z. xxxv, p. 82.

B. phantomaria, Amurland, GRAESER, B. E. Z. xxxv, p. 83; *B. basilaria*, W. Africa, *obsitaria*, Africa, p. 47, *monogrammaria*, Zanzibar, p. 48, MABILLE, Ann. Soc. Ent. Fr. (6) x; *B. hilararia*, Portorico, MÖSCHLER, p. 266, Abh. Senck. Ges. xvi; *B. tristaria*, p. 157, pl. viii, fig. 9, *commotaria*, fig. 10, Ecuador, *reissi*, fig. 13, Peru, p. 158, MAASSEN, in Stübel Reise; *B. astrapia*, New Zealand, MEYRICK, Tr. N. Z. Inst. xxii, p. 218 : n. spp.

‡ *Bryodis*, n. g., for *Lobophora viretata*, auct.; GUMPPENBERG, p. 463, N. Acta Ac. L.-C. Nat. cur. liv.

Caberodes snellenaria, Loja, DOGNIN, Le Nat. xii, p. 38, n. sp.

Carsia uniformata, Berg., = (*Symmeuria virgellata*, Mab.); BERG, p. clxx, Bull. Soc. Ent. Fr. 1890.

Celerena palawanica, Palawan, PAGENSTECHEER, Deutsche e. Z. Lep. iii, p. 31, n. sp.

‡ *Cerasympiasta*, n. g., placed before *Erosia*, p. 260, for *C. marsitata*, p. 261, *sanata*, p. 262, n. spp., Portorico; MÖSCHLER, Abh. Senck. Ges. xvi.

Cherodes ? umbrosa, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 203, n. sp.

✓ *Chartographa*, n. g., for *Lygris*, Hb. pt.; GUMPPENBERG, p. 310, N. Acta Ac. L.-C. Nat. cur. liv.

Cheimatobia brumata, note on habits and winged female; CHRISTIEN, Le Nat. xii, p. 126 : list of 63 parasites of; Ins. Life, iii, p. 76.

Chrysocestis fimbriaria, Cr., fully described; MÖSCHLER, p. 244, Abh. Senck. Ges. xvi.

Cidaria truncata and *immanata*, synonymy and variation of; SOUTH, P. S. Lond. Ent. Soc. 1888-89, pp. 145-148. *C. immanata*, variation in Iceland; WALKER, Ent. xxiii, p. 66. *C. soldaria*, *turati*, *kollararia*, *lataria*, noticed; RÄTZER, MT. Schw. ent. Ges. viii, p. 226. *C. deltoidata*, larva noticed; MEYRICK, p. 220, Tr. N. Z. Inst. xxii.

C. vallantinaria, Bône, OBERTHUR, p. 31, pl. vii, fig. 49, Études d'Ent. xiii; *C. vinaceata*, *chloronotata*, Portorico, MÖSCHLER, p. 273, Abh. Senck. Ges. xvi; *C. cerasii*, Colombia, pl. ix, fig. 5, *maculataria*, Bolivia, fig. 7, *vireonaria*, fig. 9, p. 166, *famularia*, fig. 12, *passerata*, fig. 14, *nubilaria*, fig. 11, *kirschii*, fig. 10, p. 167, *persectata*, fig. 13, Ecuador, *anguliferata*, Bolivia, fig. 15, p. 168, MAASSEN, in Stübel Reise : n. spp.

Cimicodes nebulata, Peru, MAASSEN, in Stübel Reise, p. 154, pl. viii, fig. 2, n. sp.

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Collix illævigata, Colombia, MAASSEN, in Stübel Reise, p. 163, pl. viii, fig. 26, n. sp.

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Digonis philippii, Chili, CALVERT, Nuev. Lep. p. 10, pl., fig. 1, n. sp.

Drepanodes ephyrata, Gn., = (*absconditata*, Wlk.); MÖSCHLER, p. 253, Abh. Senck. Ges. xvi.

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Endropia polychroaria, *convexaria*, Congo, MABILLE, p. 48, Ann. Soc. Ent. Fr. (6) x; *E. imitata*, Peru, MAASSEN, in Stübel Reise, p. 155, pl. viii, fig. 19 : n. spp.

Ennomos autumnaria, effects of temperature on colour and vitality of, MERRIFIELD (528).

Epicaste, n. g., for *Eupithecia fenestrata*, Mill.; GUMPPENBERG, N. Acta Ac. L.-C. Nat. cur. liv, p. 480.

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Epimecis ? *medineæ*, Chili, CALVERT, Nuev. Lep. p. 11, pl., fig. 3, n. sp.

Epione exaridaria, Amurland, GRAESER, B. E. Z. xxxv, p. 82, n. sp.

Epirrhya parisignata, n. n. for *parinotata*, Packd.; GUMPPENBERG, p. 380, N. Acta Ac. L.-C. Nat. cur. liv.

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Eulepidotus paradoxata, Gn., and allies, characters discussed; MÖSCHLER, Abh. Senck. Ges. xvi, n. sp.

Eupithecia dodoneata, food-plant; BARRETT, Ent. M. M. (2) i, p. 215.

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Geometra attendaria, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 243, n. sp.

Gynopteryx rubedinaria, W. Africa, MABILLE, p. 46, Ann. Soc. Ent. Fr. (6) x, n. sp.

Hemioplisia amœnaria, Palawan, PAGENSTECHER, Deutsche e. Z. Lep. iii, p. 28, n. sp.

Hyperetis pullaria, Loja, DOGNIN, Le Nat. xii, p. 58, n. sp.

Hyperythra lala, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 205, n. sp.

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Icterodes sparsa, n. n. for *I. conspersa*, Butl. (Ill. Lep. Het. vii); BUTLER, Ent. xxiii, p. 316.

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✓ *Leptostales*, n. g., near *Acidalia*, p. 238, for *L. oblinataria*, *devolutaria*, *præpeditaria*, *matuataria*, p. 239, *tumidaria*, *insutaria*, p. 240, n. spp., Portorico, MÖSCHLER, Abh. Senck. Ges. xvi.

✓ *Leucochesias*, n. g., for *L. mesargyrate*, n. sp., Patagonia, pl. xi, fig. 4; MABILLE, p. 158, N. Arch. Mus. (3) i.

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✓ *Limonophila*, n. g., for *Ortholitha*, Hb., GUMPPENBERG, p. 435, N. Acta Ac. L.-C. Nat. cur. liv.

Lobophora polycommata, habit of larva; WEBB, Ent. M. M. (2) i, p. 49.

Lycauges annularia, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 214, pl. vii, fig. 18, n. sp.

Lygris hyroglyphicata, Colombia, MAASSEN, in Stübel Reise, p. 165, pl. ix, fig. 8, n. sp.

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Nearcha, n. g. (*Monocteniadæ*), p. 1152, for some species of *Panagra* and *Tephрина*, and the following n. spp. from Australia, *Staurotis*, p. 1153, *paraptila*, p. 1156, *atyla*, p. 1157 ; MEYRICK, P. Linn. Soc. N.S.W. (2) iv.

Nedusia excavata, Portorico and Surinam, MÖSCHLER, Abh. Senck. Ges. xvi, p. 244, n. sp.

Nephodia (?) *monacharia*, Ecuador, MAASSEN, in Stübel Reise, p. 162, pl. v, fig. 16, n. sp.

Nolera, n. g. († *Macarides*) for *Endropia packardi*, Dew., and *zerenaria*, Mab., = (*nachtigalli*, Dew.) ; MABILIE, p. 50, Ann. Soc. Ent. Fr. (6) x.

Ænone, n. g. (*Monocteniadæ*), p. 1194, for *Æ. solaris*, *lunaris*, n. spp., Tasmania, p. 1195 ; MEYRICK, P. Linn. Soc. N.S.W. (2) iv.

Oporabia ? *arenosa*, Chili, CALVERT, Nuev. Lep. p. 9, n. sp.

Oxydia ducata, Ecuador, p. 154, pl. vii, fig. 22, *geminata*, Peru, p. 155, fig. 21, MAASSEN, in Stübel Reise, n. spp.

Panagra : for synonymy, and reference of many of Walker's species to other genera, see *Monocteniadæ* Monograph of Australian, by MEYRICK.

Panagra idea, Burma, SWINHOE, Tr. E. Soc. 1890, p. 211, pl. vii, fig. 2, n. sp.

Pero rectisectaria, variation described ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 249.

Phibalapteryx partitaria, Ecuador, MAASSEN, in Stübel Reise, p. 165, pl. ix, fig. 4, n. sp.

Phorodesma latimarginaria, Peru, MAASSEN, in Stübel Reise, p. 160, pl. viii, fig. 12, n. sp.

Pleuroprucha, n. g., placed next *Acidalia*, for *P. molitaria*, n. sp., Portorico ; MÖSCHLER, p. 238, Abh. Senck. Ges. xvi.

Polla rufolinearia, Palawan, PAGENSTECHER, Deutsche e. Z. Lep. iii, p. 28, n. sp.

Problepsis clemens, Brisbane, LUCAS, p. 1093, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Psodos bentelii, Switzerland, RÄTZER, MT. Schw.-ent. Ges. viii, p. 224 ; *P. gemina*, pl. viii, fig. 14, *splendens*, fig. 15, *delicatula*, fig. 16, Ecuador, MAASSEN, in Stübel Reise, p. 169 ; n. spp.

Racheospila confundaria, p. 242, *anomalaria*, p. 243, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. spp.

Rheumatoptera sagittifera, Europe, GUMPPENBERG, p. 292, N. Acta Ac. L.-C. Nat. cur. liv, n. sp. ♀.

Rumia inquietaria, Ecuador, MAASSEN, in Stübel Reise, p. 155, pl. vii, fig. 23, n. sp.

Sabulodes rusticata, Ecuador, pl. viii, fig. 1, *combustaria*, Colombia, fig. 4, p. 153, *confusata*, Peru, fig. 6, p. 154, MAASSEN, in Stübel Reise, n. spp.

Salpis albipunctaria, p. 155, pl. xi, fig. 6, *scodionota*, fig. 5, p. 156, MABILLE, N. Arch. Mus. (3) i, n. spp.

♂ *Satraparchis*, n. g. (*Monocteniadæ*), for *Panagra bijugata*, Wlk.; MEYRICK, p. 1158, P. Linn. Soc. N.S.W. (2) iv.

Scordylia brunonaria, Ecuador, pl. viii, fig. 29, *preciosa*, Peru, pl. ix, fig. 2, *subangulata*, Bolivia, fig. 1, MAASSEN, in Stübel Reise, p. 164, n. spp.

Scotopteryx ? *graphicus*, Chili, CALVERT, Nuev. Lep. p. 12, n. sp.

Scotosia flavolimbaria, Colombia, MAASSEN, in Stübel Reise, p. 165, pl. ix, fig. 6, n. sp.

Selenia illustraria, effects of temperature on colour and vitality of; MERRIFIELD (528).

Semiocosma platyptera, larva noticed; MEYRICK, p. 220, Tr. N. Z. Inst. xxii.

Semiothisa bisignata, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. sp.

Siona triangularia, Chili, CALVERT, Nuev. Lep. p. 8, n. sp.

Spargania præcurraria, Portorico, MÖSCHLER, p. 269, Abh. Senck. Ges. xvi, n. sp.

Syllexis intamiataria, Portorico, MÖSCHLER, p. 241, Abh. Senck. Ges. xvi, n. sp.

Syngria reticularia, *ramosaria*, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 256, n. spp.

♂ *Taxeotis*, n. g. (*Monocteniadæ*), p. 1140, for some species of *Panagra* and the following n. spp. from Australia: *endela*, *stereospila*, p. 1142, *oraula*, p. 1143, *isomeris*, p. 1144, *anthracopa*, p. 1145, *delogramma*, p. 1146, *epigyssa*, p. 1149, *isophanes*, p. 1150, *philodora*, p. 1151; MEYRICK, P. Linn. Soc. N.S.W. (2) iv.

Tephрина inæquivirgaria, W. Africa, MABILLE, p. 49, Ann. Soc. Ent. Fr. (6) x, n. sp.

Terenodes aureocapitaria, Portorico, MÖSCHLER, p. 274, Abh. Senck. Ges. xvi, n. sp.

Tetracis ianthinus, Chili, CALVERT, Nuev. Lep. p. 7, n. sp.

Thalassodes virescentaria, Bolivia, MAASSEN, in Stübel Reise, p. 160, pl. viii, fig. 11, n. sp.

♂ *Thyrinteina*, n. g., for — *quadricostaria*, H. S.; MÖSCHLER, p. 268, Abh. Senck. Ges. xvi.

Thysanopyga apicitruncaria, H. S., = (*Cimicodes illectata*, Mösch.); MÖSCHLER, p. 260, Abh. Senck. Ges. xvi.

Timandra burmana, Rangoon, SWINHÖE, Tr. E. Soc. 1890, p. 214, n. sp.

Triphosa directaria, Patagonia, MABILLE, N. Arch. Mus. (3) i, n. sp.

Trochiodes melaleucata, Ecuador, MAASSEN, in Stübel Reise, p. 169, pl. ix, fig. 3, n. sp.

✓ *Xenomusa*, n. g. (*Monocteniadæ*), for *X. monoda*, n. sp., Melbourne ; MEYRICK, p. 1198, P. Linn. Soc. N.S.W. (2) iv.

Zerene tricoloraria, Zanzibar, MABILLE, p. 50, Ann. Soc. Ent. Fr. (6) x, n. sp.

Zonosoma punctaria, varr. described and figured ; REUTER, Ent. Tidskr. xi, p. 202.

Z. delectabiliaria, Portorico, MÖSCHLER, p. 236, Abh. Senck. Ges. xvi, n. sp.

PYRALIDÆ, PHYCITIDÆ, SICULODIDÆ, EPIPASCHIIDÆ, CRAMBIDÆ.

[*Cf.* DISQUÉ (169), EPPELSHEIM (230), FORBES (271), HULST (389), LUCAS (494), MABILLE (496), MEYRICK (533, 536), MÖSCHLER (558), OLLIFF (584), RAGONOT (634, 635, 636, 637, 638), SMITH (810), SNELLEN (818), SOUTH (825), SWINHÖE (838), TEICH (845), WARREN (879), WEYMER & MAASSEN (911).]

Classification of the Tribe *Pyralidina*, admitting 2 families, viz., *Pyralidæ* and *Crambidæ*, the former with 12, the latter with 13, subfamilies ; this work includes much synonymy, which it would be superfluous to reproduce in detail below ; RAGONOT, Ann. Soc. Ent. Fr. (6) x, pp. 435, &c.

The *Pyralidina* of the European fauna classified, the genera—82 in number—fully described, and the species referred to them catalogued. Eight families adopted, viz., *Pyraustidæ*, *Musotimidæ*, *Pyralididæ*, *Phycitidæ*, *Galleriadæ*, *Crambidæ*, *Pterophoridæ*, and *Orneodidæ* ; *Epipaschiidæ* being merged in *Pyralididæ* ; MEYRICK, Tr. E. Soc. 1890.

✓ *Acallis*, n. g. (*Endotrichiinae*), for *A. fernaldi*, n. sp., California ; RAGONOT, p. 540, Ann. Soc. Ent. Fr. (6) x.

Acentropus niveus, habits and larva noticed ; DISQUÉ, S. E. Z. li, pp. 57–59.

Acharana otreusalis, Wlk., = (*Botys*? *tridentalis*, Sn.) ; SNELLEN, Tr. E. Soc. 1890, p. 594.

Acrobasis sodalella, larva noticed ; EPPELSHEIM, S. E. Z. li, p. 54.

A. nigrosignella, p. 123, *comptoniella*, *betulella*, p. 125, *hebescella*, *gulosella*, p. 126, N. America, HULST, Tr. Am. Ent. Soc. xvii, n. spp.

✓ *Acrodegmia*, n. g., *Chrysauginæ*, p. 472, for *A. pselaphialis*, n. sp., Surinam, p. 473 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

✓ *Acropentias*, n. g., for *Sparagmia obtusalis*, Christ. ; MEYRICK, Tr. E. Soc. 1890, p. 470.

✓ *Acropteryx*, n. g. (*Chrysauginæ*), p. 469, for *A. herbacealis*, n. sp., Chiriqui, p. 470 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Acrospila concordalis, *gastralis*, distinctive characters ; MÖSCHLER, p. 294, Abh. Senck. Ges. xvi.

A. ? phellinoidalis, Colombia, MAASSEN, in Stübel Reise, p. 170, pl. ix, fig. 26, n. sp.

✓ *Acutia*, n. g. (*Endotrichiinae*), p. 539, for *A. falciferalis*, n. sp., Petropolis, p. 540 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

† *Adenopteryx*, n. g. (*Chrysauginæ*), p. 507, for *A. conchyliatalis*, n. sp., Algeria, p. 508; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Agathodes (?) *dubitalis*, Ecuador, MAASSEN, in Stübel Reise, p. 170, pl. ix, fig. 21, n. sp.

Agrotera nemoralis, larva noticed; HEYLAERTS, Tijdschr. Ent. xxxiii, p. xxiv.

† *Alpheias*, n. g. (*Endotrichiinae*), p. 543, for *A. baccalis*, *gitonalis*, n. spp., Sonora, p. 544; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Alpheraakaia, n. g. (*Endotrichiinae*), for *Paraponyx obnubilalis*, Chv.; RAGONOT, p. xcii, Bull. Soc. Ent. Fr. 1890.

† *Amestria*, n. g. (*Endotrichiinae*), p. 545, for *A. oculiferalis*, n. sp., Texas, p. 546; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

† *Anisothrix*, n. g. (*Chrysauginæ*), p. 478, for *A. adustalis*, n. sp., Chanchamayo, p. 478; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

† *Anthophilopsis*, n. g. (*Pyraustinae*), for *moeschleri*, Chr., and *baphialis*, Led.; RAGONOT, Ann. Soc. Ent. Fr. (6) x, p. 449.

† *Aplomastix*, n. g.; type, *Asopia moninalis*, Wlk.; WARREN, p. 478, Ann. N. H. (6) vi.

† *Area*, n. g. (*Chrysauginæ*), p. 483, for *A. diaphanalis*, n. sp., Goya, p. 484; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Arta epicænalis, p. 536, N. America, *bichordalis*, Pernambuco, *encaustalis*, Petropolis, p. 537, RAGONOT, Ann. Soc. Ent. Fr. (6) x, n. spp.

Asciodes titubalis, Portorico, MÖSCHLER, p. 303, pl. fig. 6, Abh. Senck. Ges. xvi, n. sp.

Asopia glaucinalis, larva noticed; DISQUÉ, S. E. Z. li, p. 85.

A. subresectalis, Sikkim, SNELLEN, Tr. E. Soc. 1890, n. sp.

† *Atascosa*, n. g., near *Poujadia*, for *A. bicolorella*, *floscella*, n. spp., Texas; HULST, p. 210, Tr. Am. Ent. Soc. xvii.

Auxomitia mirificalis, Led., this genus and species sunk as being a var. of *Filodes fulvodorsalis*; SNELLEN, Tr. E. Soc. 1890, p. 602.

Balanotis arctandalis, Brisbane, LUCAS, p. 1098 (is probably a var. of *didymalis*, Wlk., p. 1099), P. Linn. Soc. N.S.W. (2) iv, n. sp.

Botys silhetalis, Gn., var. = (*Porphyritis sikkima*, Moore), SNELLEN, Tr. E. Soc. 1890, p. 572; *iopasalis*, Wlk., = (*Botyodes leopardalis*, Moore), ELWES, p. 586, t. c. *B. arbiter*, Butl., referred to *Pagyda*; SNELLEN, t. c. p. 615. *B. tristrialis*, Br., referred to *Hedylepta*; SNELLEN, t. c. p. 619. *B. fissalis*, larva described; BEUTENMÜLLER, Canad. Ent. xxii, p. 16. *B. crocealis*, food-plant; BREIGNET, Bull. Soc. Ent. Fr. 1890, p. lxxiv.

B. trigonalis, W. Africa, MABILLE, p. 51, Ann. Soc. Ent. Fr. (6) x; *B. præpandalis*, p. 573, *plumbociliialis*, p. 576, *rubellalis*, *coactalis*, p. 577, *arisonialis*, p. 578, *subargentalis*, p. 579, *octonalis*, p. 581, *cænostolalis*, p. 582, *restrictalis*, p. 584, *angustalis*, p. 585, *demeter*, p. 586, *onustalis*, p. 587, *credulalis*, *attemptalis*, p. 590, Sikkim, SNELLEN, Tr. E. Soc. 1890; *B. nelumbialis*, N. America, SMITH, Ent. Am. vi, p. 88, woodcuts; *B. citrinialis*, *oculatalis*, p. 282, *pertentalis*, pl., fig. 7, *albifrontalis*, p. 284, *principaloides*, *placentalis*, *viscendalis*, p. 285, *intricatalis*, p. 286, *evincalis*, *concinnaalis*, p. 287, *fortificalis*, *secernalis*, p. 288, *flammeolalis*, p. 289,

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Portorico, MÖSCHLER, Abh. Senck. Ges. xvi ; *B. rhodophillalis*, pl. ix, fig. 20, *impeditalis*, fig. 22. *perlalis*, fig. 23, p. 169, Ecuador, *helvolalis*, Bolivia, fig. 26, p. 170, MAASSEN, in Stübel Reise : n. spp.

Bradina ? *pionealis*, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 624, n. sp.

Calamochrous brevipalpis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 599, n. sp.

↓ *Callasopia*, n. g., near *Asopia*, for *C. rosealis*, n. sp., Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 275.

↓ *Callinaias*, n. g. (*Hydrocampides*), p. 286, for *C. gracilentalis*, n. sp., Rangoon, p. 287, pl. viii, fig. 6, SWINHOE, Tr. E. Soc. 1890.

↓ *Canarsia*, n. g., type *Nephopteryx ulmiarrosorella*, Clem. ; HULST, p. 179, Tr. Am. Ent. Soc. xvii.

Catachysta vestigialis, Snell., referred to *Paraponyx* ; MÖSCHLER, p. 318, Abh. Senck. Ges. xvi.

C. sumptuosalis, *mimalis*, Portorico, MÖSCHLER, p. 319, Abh. Senck. Ges. xvi, n. spp.

↓ *Catacteniza*, n. g., near *Conchylodes*, p. 313, for *C. euvexalis*, n. sp., Portorico, p. 314, pl. fig. 13 ; MÖSCHLER, Abh. Senck. Ges. xvi.

↓ *Cataonia*, n. g. (*Pyraustinae*), for *C. monocerialis*, n. sp., Asia Minor ; RAGONOT, p. 450, Ann. Soc. Ent. Fr. (6) x.

Cayuga bistratella, California ; HULST, Tr. Am. Ent. Soc. xvii, p. 209, n. sp.

↓ *Centropseustis*, n. g., near *Hypotia*, p. 1105, for *C. astrapora*, n. sp., Sydney, p. 1106 ; MEYRICK, P. Linn. Soc. N.S.W. (2) iv.

Ceratoclasia metatalis, Portorico, MÖSCHLER, p. 307, Abh. Senck. Ges. xvi, n. sp.

Chabula, Moore, = (*Heterocnephes*, Led.) ; SNELLEN, Tr. E. Soc. 1890, p. 616.

Chalcoëla discedalis, Portorico, MÖSCHLER, p. 320, Abh. Senck. Ges. xvi, n. sp.

↓ *Chalinitis*, n. g. (*Endotrichinae*), p. 528, for *C. olealis*, n. sp., N. America, p. 529 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Chilo ? *ambiguellus*, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 642, pl. xx, fig. 4, n. sp.

Circobotys ? *phycidalis*, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 599, n. sp.

Cliniodes semilunalis, Portorico, MÖSCHLER, p. 297, Abh. Senck. Ges. xvi, n. sp.

Cnaphalocrocis perpersalis, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 293, n. sp.

↓ *Celoma*, n. g. (*Pyralididae*), p. 276, for *C. tortricalis*, n. sp., Portorico, p. 277, MÖSCHLER, Abh. Senck. Ges. xvi.

Conchylodes paucipunctalis, p. 633, pl. xix, fig. 2, *C. ? marginalis*, p. 635, Sikkim, SNELLEN, Tr. E. Soc. 1890, n. spp.

Conogethes haemactalis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 592, n. sp.

Cordylopeza aenochroalis, Merida, RAGONOT, p. 509, Ann. Soc. Ent. Fr. (6) x, n. sp.

√ *Crambostenia*, n. g., p. 292, near *Cirrhocrista*, for *C. angustifimbrialis*, n. sp., p. 293, and *C. acciusalis*, Wlk. ; WARREN, Tr. E. Soc. 1890.

Crampus latellus, p. 644, *dividellus*, p. 645, Sikkim, SNELLEN, Tr. E. Soc. 1890 ; *C. delomatellus*, p. 322, *discludellus*, *gestatellus*, p. 323, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi ; *C. psychellus*, Ecuador, pl. ix, fig. 24, *angustalatellus*, Bolivia, fig. 28, MAASSEN, in Stübel Reise, p. 171 : n. spp.

√ *Critonia*, n. g. (*Anerastini*), near *Lodiana*, for *C. subconcinella*, n. sp., Burma ; RAGONOT, Bull. Soc. Ent. Fr. 1890, p. cexiv.

Crocidophora ? *flavicinctalis*, p. 595, *flaviciliialis*, p. 596, pl. xx, fig. 5, *lutusalis*, p. 597, *amænalis*, p. 598, Sikkim, SNELLEN, Tr. E. Soc. 1890, n. spp.

√ *Crossophora*, n. g., placed after *Ceratoclasia*, for *C. miscellalis*, n. sp., Portorico ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 308.

√ *Cyclocena*, n. g., near *Microthyris*, for *C. gestatalis*, n. sp., Portorico, pl. fig. 20 ; MÖSCHLER, p. 309, Abh. Senck. Ges. xvi.

Cydatima elwesialis, N. India, SNELLEN, Tr. E. Soc. 1890, p. 607, pl. xix, fig. 1, n. sp.

√ *Dannemora*, n. g., near *Peoria*, for *D. edentella*, n. sp., Florida ; HULST, p. 212, Tr. Am. Ent. Soc. xvii.

√ *Dasynemia*, n. g. (*Chrysauginæ*), p. 489, for *D. depressalis*, n. sp., Peru, p. 490 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Desmia viduatalis, Portorico, MÖSCHLER, p. 311, Abh. Senck. Ges. xvi, n. sp.

Deuterollyta infectalis, p. 279, *ragonoti*, p. 280, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. spp.

√ *Diaphantania*, n. g., placed near *Spilomela*, for *D. conspicualis*, n. sp., Portorico ; MÖSCHLER, p. 314, Abh. Senck. Ges. xvi.

Diasemia inabsconsalis, Portorico, MÖSCHLER, p. 305, Abh. Senck. Ges. xvi, n. sp.

Dichogama krugii, pl., fig. 2, *amabilis*, p. 296, *fernaldi*, *bergii*, p. 297, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. spp.

Diplotyla exuvialis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 627, n. sp.

√ *Donacaula*, n. g., near *Schænobius*, for *mucronella*, Schiff. ; MEYRICK, Tr. E. Soc. 1890, p. 466.

Ebulea dichroma, Moore, referred to *Calamochrous* ; SNELLEN, Tr. E. Soc. 1890, p. 599.

Eclipsiodes (sub *Botys*) *pangialis*, Feld., = (*Pyralis cuprealis*, Moore) ; SNELLEN, Tr. E. Soc. 1890, p. 571.

E. marmaropa, New South Wales, MEYRICK, P. Linn. Soc. N.S.W. (2) iv, p. 1111, n. sp.

Elasmopalpus melanellus, p. 157, *floridellus*, p. 158, Florida, HULST, Tr. Am. Ent. Soc. xvii, n. spp.

Endotricha flammealis = (*Dothta similata*, Moore) ; ELWES, Tr. E. Soc. 1890, p. 569.

E. serratalis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 570 ; *E. vino-*

lentalis, Senegal, p. 525, *fuscobasalis*, E. India, p. 526, RAGONOT, Ann. Soc. Ent. Fr. (6) x : n. spp.

✓ *Endotrichodes*, n. g. (*Endotrichiinae*), p. 521, for *E. perustalis*, n. sp., Shanghai, p. 522 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Ephestia interpunctella and *kulmiella* noticed as one species ; PATTON, Ins. Life, iii, p. 158 ; cf. RILEY, t. c. p. 134. *E. kulmiella* in N. America ; FLETCHER, Canad. Ent. xxii, pp. 41-44 : in Canada ; BELL, Am. Nat. xxiv, pp. 200-204.

E. nigrella, Texas, HULST, Tr. Am. Ent. Soc. xvii, p. 200, n. sp.

Epicrocis terebrans, N.S. Wales, OLLIFF, Rec. Austr. Mus. i, p. 32, pl. ii, n. sp.

✓ *Episemnia*, n. g. (*Chrysauginae*), p. 481, for *E. subauritalis*, n. sp., Brazil ?, p. 482, and *Semnia josialis*, Feld. & Rog. ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

↓ *Epitamyra*, n. g., for *Tamyra albomaculalis* and *minuscularis*, Mösch. ; RAGONOT, p. 503, Ann. Soc. Ent. Fr. (6) x.

✓ *Erioptycha*, n. g. (*Chrysauginae*), p. 496, for *E. umbrivittalis*, n. sp., Santarem, p. 497 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Eschata percandida, Rangoon, SWINHÖE, Tr. E. Soc. 1890, p. 293, n. sp.

Etiella rubribasella, Florida, HULST, Tr. Am. Ent. Soc. xvii, p. 170, n. sp.

Euclasta torquillalis, Portorico, MÖSCHLER, p. 302, Abh. Senck. Ges. xvi, n. sp.

Eudorea dubitalis, habits of larva ; MACHIN, Ent. M. M. (2) i, p. 22.

✓ *Euerippe*, n. g. (*Endotrichiinae*), p. 538, for *E. bistrialis*, n. sp., Pernambuco, p. 539 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

↓ *Eurycraspeda*, n. g. (*Steniides*), p. 284, for *E. burmanalis*, Burma, n. sp., p. 285, pl. vii, fig. 19, SWINHÖE, Tr. E. Soc. 1890.

Eurycreon collucidalis, Portorico ; MÖSCHLER, p. 290, Abh. Senck. Ges. xvi, n. sp.

Eurypta atridorsalis, Espirito Santo, RAGONOT, Ann. Soc. Ent. Fr. (6) x, p. 481, n. sp.

Euzophera semifuneralis = (*impletella*, Zell., = *Stenoptycha pallulella*, Hulst), p. 298, life-history, p. 295 ; FORBES, Psyche, v.

E. ostricolorella, p. 175, *franconiella*, p. 177, N. America, HULST, Tr. Am. Ent. Soc. xvii, n. spp.

Filodes octomaculalis, Moore, = (*Rhagoba bimaculata*, Moore), referred to *Botys* ; SNELLEN, Tr. E. Soc. 1890, p. 589.

F. sexpunctalis, p. 603, pl. xx, fig. 6, *F. ? striolalis*, p. 604, Sikkim ; SNELLEN, Tr. E. Soc. 1890, n. spp.

Galleria cereana, habits ; BARRETT, Ent. M. M. (2) i, p. 19, and BALDING, t. c. p. 157.

↓ *Girtecta*, n. g. (*Hydrocampides*), p. 285, for *G. argentuosalis*, n. sp., Burma, p. 286 ; SWINHÖE, Tr. E. Soc. 1890.

Glyphodes microta, Brisbane, MEYRICK, P. Linn. Soc. N.S.W. (2) iv, p. 1108, n. sp.

↓ *Glyptocera*, n. g. (*Phycites* ; type, *Eph. consobrinella*, Z.) ; RAGONOT, p. 7, Bull. Soc. Ent. Fr. (6) x.

Gonocausta ? *vestigialis*, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 628, n. sp.

Hapulia ? *albicostalis*, pl. viii, fig. 14, *H. cascalis*, pl. viii, fig. 18, p. 271, *perbonalis*, fig. 17, p. 272, Burma, SWINHÖE, Tr. E. Soc. 1890, n. spp.

✓ *Haritalodes*, n. g. ; type, *Botys multilinealis*, Wlk. ; WARREN, p. 476, Ann. N. H. (6) vi.

✓ *Heliades*, n. g. (*Endotrichiinae*), for *Pempelia mulleolella*, Hulst ; RAGONOT, p. 534, Ann. Soc. Ent. Fr. (6) x.

✓ *Hemiscopsis*, n. g. ; type, *Scopula suffusalis*, Wlk. ; WARREN, p. 475, Ann. N. H. (6) vi.

Heosphora virginella, p. 1115, *chlorogramma*, p. 1116, Queensland, MEYRICK, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Heterocnephres reniferalis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 616, n. sp.

Heterographis tenuigranella, *costistrigella*, Biskra, RAGONOT, p. cxi, Bull. Soc. Ent. Fr. 1890 ; *H. umbrilimbella*, E. India, RAGONOT, p. ccxiii, t. c. : n. spp.

Hileithia ductalis, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 292, n. sp.

Homæosoma cretacella, larva noticed ; EPPELSHEIM, S. E. Z. li, p. 54.

Homophysa dolatatis, Portorico, MÖSCHLER, p. 321, Abh. Senck. Ges. xvi, n. sp.

✓ *Homosassa*, n. g. ; type, *Ephestia ella*, Hulst ; HULST, p. 214, Tr. Am. Ent. Soc. xvii.

Hoterodes cinerealis, Moore, genus queried, SNELLEN ; sexes noticed, ELWES, p. 606, Tr. E. Soc. 1890.

Hydrocampa colonalis, Brem., referred to *Musiotima* ; MEYRICK, Tr. E. Soc. 1890, p. 469. *H. pulchralis*, Moore, referred to *Botys* as a subgenus ; SNELLEN, t. c. p. 583. *H. sacadusalis*, Wlk., redescribed as *Hydreuretis sacadalis* ; MEYRICK, p. 1110, P. Linn. Soc. N.S.W. (2) iv.

H. simplalis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 638 ; *H. palliolatilis*, Rangoon, SWINHÖE, t. c. p. 287 ; *H. nitidalis*, Ecuador, MAASSEN, in Stübel Reise, p. 171, pl. ix, fig. 25 : n. spp.

✓ *Hypocosmia*, n. g. (*Chrysauginæ*), p. 504, for *H. definitalis*, n. sp., Ceylon, p. 505 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

✓ *Hypographia*, n. g. (*Phycitidæ*), for *H. uncinatella*, n. sp., Lambessa ; RAGONOT, p. xc, Bull. Soc. Ent. Fr. 1890.

✓ *Hypogryphia*, n. n. for *Hypographia*, Rag. ; RAGONOT, p. cxix, Bull. Soc. Ent. Fr. 1890.

✓ *Imerina*, n. g. (*Endotrichiinae*), for *I. mabillalis*, n. sp. ?, Madagascar ; RAGONOT, p. 530, Ann. Soc. Ent. Fr. (6) x.

✓ *Latilia*, n. g. (*Phycites*) ; type, *Dakruma coccidivora*, Comst. ; RAGONOT, p. viii, Bull. Soc. Ent. Fr. (6) x.

✓ *Laodamia*, n. g., near *Salebria* ; type, *Pemp. fæcella*, Z. ; RAGONOT, p. vii, Bull. Soc. Ent. Fr. (6) x.

✓ *Lepidogma*, n. g., near *Hypotia*, for *tamaricialis*, Mn. ; MEYRICK, Tr. E. Soc. 1890, p. 472.

✓*Leucocraspeida*, n. g.; type, *Botys illectalis*, Wlk.; WARREN, p. 475, Ann. N. H. (6) vi.

Lineodes triangulalis, metagrammalis, Portorico, MÖSCHLER, p. 305, Abh. Senck. Ges. xvi, n. spp.

Lipocosma hebescalis, Portorico, MÖSCHLER, p. 316, Abh. Senck. Ges. xvi, n. sp.

✓*Lophopleura*, n. g. (*Chrysauginae*), for *L. xanthotænalis*, n. sp., Amazons; RAGONOT, p. 506, Ann. Soc. Ent. Fr. (6) x.

✓*Loxoscia*, n. g.; type, *Botys scinialis*, Wlk.; WARREN, p. 476, Ann. N. H. (6) vi.

✓*Macrothea*, n. g. (*Endotrichiinae*), p. 544, for *M. interalbicalis*, n. sp., Sonora, p. 545; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

✓*Manhatta*, n. n. to replace *Hornigia*, Rag.; HULST, p. 196, Tr. Am. Ent. Soc. xvii.

Margaronia nigropunctalis, Br., *quinguepunctalis*, Boisd., *neomera*, Butl., note on characters of; SNELLEN, Tr. E. Soc. 1890, p. 610.

M. fallacialis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 609, n. sp.

✓*Maricota*, n. g.; type, *Ragonotia lativella*, Rag.; HULST, p. 205, Tr. Am. Ent. Soc. xvii.

Megasis atrella, Colorado, HULST, p. 166, Tr. Am. Ent. Soc. xvii, n. sp.

Meroptera canescentella, Texas, HULST, p. 149, Tr. Am. Ent. Soc. xvii, n. sp.

✓*Microstega*, n. g., near *Pyrausta*, for *pandalis*, Hb.; MEYRICK, Tr. E. Soc. 1890, p. 450.

Microthyris prolongalis, Gn., = (*sectalis*, Gn.); MÖSCHLER, p. 309, Abh. Senck. Ges. xvi.

✓*Mimorista*, n. g.; type, *Samea botydalis*, Gn.; WARREN, p. 476, Ann. N. H. (6) vi.

✓*Mineola*, n. g. (*Phycitidae*), for a part of *Acrobasis*; type, *indiginella*, Z.; HULST, p. 126, Tr. Am. Ent. Soc. xvii.

✓*Mnesixena*, n. g., near *Hypotia*, for seven previously described species; MEYRICK, Tr. E. Soc. 1890, p. 472.

✓*Moodna*, n. g., p. 193, near *Ephestia*, for *M. pelviculella*, n. sp., New York, p. 194; HULST, Tr. Am. Ent. Soc. xvii.

Myelois grossipunctella, Rag., habitat of; RAGONOT, Ent. Am. vi, p. 64.

M. nivosella, Algeria, RAGONOT, p. cix, Bull. Soc. Ent. Fr. 1890; *M. immundella*, Texas, p. 117, *obnupsella*, N. America, p. 118, HULST, Tr. Am. Ent. Soc. xvii : n. spp.

Nephopteryx gilvibasella, Texas, HULST, Tr. Am. Ent. Soc. xvii, p. 145, n. sp.

Nosophora albiguttalis, Rangoon, SWINHÖE, Tr. E. Soc. 1890, p. 273, pl. viii, fig. 16, n. sp.

Nyctegretis achatinella, larva noticed; DISQUÉ, S. E. Z. li, p. 85.

✓*Ocresia*, n. g. (*Chrysauginae*), p. 485, for *O. bisinualis*, n. sp., Petropolis, p. 486; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Oligostigma saturatalis, p. 639, *papulalis*, p. 640, Sikkim, SNELLEN, Tr. E. Soc. 1890, n. spp.

- Omiodes*, = (*Charema*, Moore) ; SNELLEN, Tr. E. Soc. 1890, p. 619.
O. palliventralis, Sikkim, SNELLEN, p. 620, Tr. E. Soc. 1890 ; *O. insolutalis*, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 301, n. spp.
Omphis repetitalis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 621, pl. xix, fig. 6, n. sp.
 ✓ *Ophias*, n. g. (*Endotrichiinae*), p. 517, for *A. albiundalis*, n. sp., Pernambuco, p. 518 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.
 ✓ *Opisthedeicta*, n. g. ; type, *Oligostigma poritialis*, Wlk. ; WARREN, p. 478, Ann. N. H. (6) vi.
 ✓ *Opsibotys*, n. g., for *Botys*, auct. : WARREN, p. 474, Ann. N. H. (6) vi.
Orobena implicitalis, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 292, n. sp.
 ✓ *Orphanostigma*, n. g. ; type, *Asopia ? abruptalis*, Wlk. ; WARREN, p. 478, Ann. N. H. (6) vi.
 ✓ *Orthospila*, n. g. ; type, *Zebronia plutusalis*, Wlk. ; WARREN, p. 477, Ann. N. H. (6) vi.
Oryba conspiciualis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 562, n. sp.
 ✓ *Oryctopleura*, n. g. (*Chrysauginae*), p. 495, for *O. arcuatalis*, n. sp., Brazil, p. 496, RAGONOT, Ann. Soc. Ent. Fr. (6) x.
 ✓ *Pachymorphus*, n. g. (*Crambidae*), for *P. subductellus*, n. sp., Portorico ; MÖSCHLER, p. 324, Abh. Senck. Ges. xvi.
Pachyzancla mellealis, Burma, SWINHOE, Tr. E. Soc. 1890, p. 282, n. sp.
Pagyda lustralis, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 615 ; *P. rubricatalis*, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 282 : n. spp.
Paliga leucanal, Rangoon, SWINHOE, Tr. E. Soc. 1890, p. 276, pl. viii, fig. 15, n. sp.
 ✓ *Palmitia*, n. g., for *Hypotia massiliensis*, Dup. ; RAGONOT, Bull. Soc. Ent. Fr. 1890, p. xciii.
Pannucha vicinalis, p. 567, pl. xix, fig. 2, *asopialis*, *dimidialis*, p. 568, Sikkim, SNELLEN, Tr. E. Soc. 1890, n. spp.
 ✓ *Paracymoriza*, n. g. ; type, *Oligostigma vagalis*, Wlk. ; WARREN, p. 479, Ann. N. H. (6) vi.
Paraponyx rugosalis, Portorico, MÖSCHLER, p. 318, Abh. Senck. Ges. xvi, n. sp.
 ✓ *Parasamera*, n. g. ; type, *Locastra cuproviridalis*, Moore ; WARREN, p. 474, Ann. N. H. (6) vi.
 ✓ *Parasopia*, n. g., near *Asopia*, p. 275, for *P. dissimilalis*, n. sp., Portorico, p. 276, MÖSCHLER, Abh. Senck. Ges. xvi.
 ✓ *Paratalanta*, n. g., near *Omiodes*, for *ussurialis* and *heterogenalis*, Brem. ; MEYRICK, Tr. E. Soc. 1890, p. 440.
Paravetta flexuosa, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 558, n. sp.
 ✓ *Pardomima*, n. g. ; type, *Botys amyntus*, Wlk. ; WARREN, p. 477, Ann. N. H. (6) vi.
 ✓ *Pelusgis*, n. g. (*Chrysauginae*), for *P. hypogryphalis*, n. sp., Petropolis ; RAGONOT, p. 487, Ann. Soc. Ent. Fr. (6) x.

Pempelia petrella, Z., = (*Trachonitis erectalis*, Wlk.) ; RAGONOT, Ent. Am. vi, p. 64.

✓ *Penestola*, n. g., placed next *Ommatospila*, for *P. præficalis*, n. sp., Portorico and Surinam ; MÖSCHLER, p. 316, Abh. Senck. Ges. xvi.

✓ *Penthesilea*, n. g. (*Chrysauginæ*), for *P. sacculalis*, n. sp., N. America ? RAGONOT, p. 493, Ann. Soc. Ent. Fr. (6) x.

✓ *Perseis*, n. g. (*Endotrichiinae*), for *Asopia culiculalis*, Hulst ; RAGONOT, p. 538, Ann. Soc. Ent. Fr. (6) x.

Phacellura elegans, p. 299, *infernalis*, p. 300, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi ; *P. terminalis*, pl. ix, fig. 17, *grisealis*, fig. 18, Ecuador, MAASSEN, in Stübel Reise, p. 170 : n. spp.

Phalangiodes rivulalis, Sikkim, SNELLEN, p. 637, pl. xx, fig. 1, Tr. E. Soc. 1890, n. sp.

✓ *Phædropsis*, n. g. ; type, *Asopia chromalis*, Gn. ; WARREN, p. 476, Ann. N. H. (6) vi.

Phycitide : HULST gives a monograph of the N. American species, with tables, and a systematic catalogue ; two subfamilies, *Phycitinae* and *Peoriinae*, based on the genitalia, are adopted : Tr. Am. Ent. Soc. pp. 93, &c.

Phycis rubifasciella; larva described ; BEUTENMÜLLER, Canad. Ent. xxii, p. 16. *P. dilutella*, Hb., = (*adornatella*, Tr., and *subornatella*, Dup.) ; BARRETT, Ent. M. M. (2) i, p. 20.

Piesmopoda steniella, Burma, RAGONOT, p. ccxiii, Bull. Soc. Ent. Fr. 1890, n. sp.

Pinipestis albiovittella, New Mexico, HULST, p. 138, Tr. Am. Ent. Soc. xvii, n. sp.

Pionea nobilis, Moore, referred to *Botys* ; SNELLEN, Tr. E. Soc. 1890, p. 575.

Pitama lativitta, Moore, referred to *Margaronia* ; SNELLEN, Tr. E. Soc. 1890, p. 611.

✓ *Pleuroptya*, n. g., near *Notarcha*, for *aurantiacalis*, F. R. ; MEYRICK, p. 443, Tr. E. Soc. 1890.

Pramadea denticulata, Moore, referred to *Coptobasis* ; SNELLEN, Tr. E. Soc. 1890, p. 627.

P. carbatinalis, Rangoon, SWINHOE, Tr. E. Soc. 1890, pl. viii, fig. 13, n. sp.

Pristophora nigrogranella, Biskra, RAGONOT, p. cx, Bull. Soc. Ent. Fr. 1890, n. sp.

✓ *Prochoristis*, n. g., near *Cybolomia*, for *rupicapralis*, Ld., *capparidis*, Christ., *simplicialis*, Brem. ; MEYRICK, Tr. E. Soc. 1890, p. 458.

✓ *Protonoceras*, n. g. ; type, *Botys tropicalis*, Wlk. ; WARREN, p. 475, Ann. N. H. (6) vi.

Psammotis pulveralis, larva noticed ; DISQUÉ, S. E. Z. li, p. 57.

✓ *Psectrodes*, n. g. (*Chrysauginæ*), for *P. herminialis*, n. sp., Brazil ; RAGONOT, p. 488, Ann. Soc. Ent. Fr. (6) x.

✓ *Pseudanalthes*, n. g. ; type, *Botys idyalis*, Wlk. ; WARREN, p. 477, Ann. N. H. (6) vi.

Pygospila tyres, Cr., sexual distinctions noticed ; SNELLEN, Tr. E. Soc. 1890, p. 617.

Pyrallis pictalis, note on locality of ; BARRETT, Ent. M. M. (2) i, pp. 138 & 243, *P. angulifascia*, Moore, referred to *Cledeobia* and redescribed ; SNELLEN, Tr. E. Soc. 1890, p. 561.

✓*Pyraustodes*, n. g. (*Chrysauginæ*), p. 484, for *P. flavicostalis*, n. sp., Brazil, p. 485 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Ragonotia saganella, Colorado, HULST, p. 205, Tr. Am. Ent. Soc. xvii, n. sp.

✓*Rhectothyris*, n. g., for *Samea* ? *gratiosalis*, Wlk. ; WARREN, p. 474, Ann. N. H. (6) vi.

Rhodophea duplicella, Burma, RAGONOT, p. cexiii, Bull. Soc. Ent. Fr. 1890, n. sp.

✓*Saccopleura*, n. g. (*Chrysauginæ*), p. 502, for *S. catocalis*, n. sp., Chiriqui, p. 503 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Salbia preformatalis, Portorico, MÖSCHLER, p. 291, Abh. Senck. Ges. xvi, n. sp.

Salebria contatella, p. 16, *cellella*, p. 17, larvæ described ; BEUTEN-MÜLLER, Canad. Ent. xxii.

S. cirtensis, *numidella*, N. Africa, RAGONOT, p. cx, Bull. Soc. Ent. Fr. 1890 ; *S. semiobscura*, p. 151, *celtidella*, p. 155, N. America ; HULST, Tr. Am. Ent. Soc. xvii : n. spp.

Samea conjunctalis, Portorico, MÖSCHLER, p. 290, Abh. Senck. Ges. xvi, n. sp.

✓*Satanastra*, n. g., for *Conchylodes argyria*, Butl. ; MEYRICK, Tr. E. Soc. 1890, p. 442.

✓*Schistoneura*, n. g. (*Endotrichiinae*), p. 527, for *S. flavitinctalis*, n. sp., Colombia, p. 528, RAGONOT, Ann. Soc. Ent. Fr. (6) x.

✓*Sciorista*, n. g. ; type, *Botys signatalis*, Wlk. ; WARREN, p. 475, Ann. N. H. (6) vi.

Scirpophaga longicornis, Portorico, MÖSCHLER, p. 321, Abh. Senck. Ges. xvi, n. sp.

✓*Sclerocona*, n. g., near *Phlyctænia*, for *acutella*, Ev. ; MEYRICK, Tr. E. Soc. 1890, p. 445.

Scoparia ambigualis, var. = (*atomalis*), p. 7, *S. angustea*, broods of, p. 8 ; BANKES, Ent. M. M. (2) 1. *S. mercurella* and *cratægella*, characters of ; *id. t. c.* pp. 98 & 210. *S. basistrigalis* and *ambigualis*, characters discussed ; PORRITT, *t. c.* p. 88.

S. signella, p. 72, *tæniatella*, p. 73, Baltic, TEICH, Arb. Ver. Riga (n.s.) vi (? n. spp. or varr. of *S. ambigualis*) ; *S. pulveralis*, p. 570, *medinella*, p. 571, Sikkim, SNELLEN, Tr. E. Soc. 1890 : n. spp.

Scopocera variegata, Moore, referred to *Cerasphora* ; SNELLEN, Tr. E. Soc. 1890, p. 569.

✓*Seneca*, n. g., for *Cateremna tumidulella*, Rag. ; HULST, p. 177, Tr. Am. Ent. Soc. xvii.

✓*Sisyracera*, n. g., for *Leucinodes* ? *preciosalis*, Mösch. ; MÖSCHLER, p. 313, Abh. Senck. Ges. xvi.

↓ *Somatania*, n. g., placed next *Omiodes*, for *S. pellucidalis*, n. sp., Portorico, pl., fig. 22 ; MÖSCHLER, p. 301, Abh. Senck. Ges. xvi.

Statina gaudiella, N. America, HULST, p. 216, Tr. Am. Ent. Soc. xvii, n. sp.

Staudingeria fractifasciella, Biskra, RAGONOT, p. cxi, Bull. Soc. Ent. Fr. 1890, n. sp.

Stemmatophora merged in *Pyralis*, MEYRICK, Tr. E. Soc. 1890, p. 476.

S. tactilis, denticulata, pl. viii, fig. 7, Burma, SWINHÖE, p. 290, Tr. E. Soc. 1890, n. spp.

↓ *Sthenobea*, n. g. (*Endotrichiinae*), for *S. abnormalis*, n. sp., Ecuador ; RAGONOT, Am. Soc. Ent. Fr. (6) x, p. 541.

Striglina scallula, n. var., *immaculata* ; MÖSCHLER, Abh. Senck. Ges. xvi, p. 123.

Sybrida inordinata, ♀ described ; ELWES, Tr. E. Soc. 1890, p. 559.

↓ *Syntonarcha*, n. g., near *Cledeobia*, for *S. iriastis*, n. sp., Brisbane ; MEYRICK, p. 1107, P. Linn. Soc. N.S.W. (2) iv.

Tamyra albomaculalis, minusculalis, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 278, n. spp.

↓ *Tamyrodes*, n. g. (*Chrysauginae*), p. 476, for *T. papulalis*, n. sp., Cayenne, p. 477 ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Taurica sikkima, Moore, referred to *Stericta* and redescribed ; SNELLEN, Tr. E. Soc. 1890, p. 563.

↓ *Tephros*, n. g., near *Salebria*, for *T. ephippella*, n. sp., Burma ; RAGONOT, p. cccxiii, Bull. Soc. Ent. Fr. 1890, n. sp.

Tetralopha insularella, Portorico, MÖSCHLER, p. 325, Abh. Senck. Ges. xvi, n. sp.

↓ *Tetraphana*, n. n. to replace *Singamia*, Möschl. ; RAGONOT, p. 471, Ann. Soc. Ent. Fr. (6) x.

↓ *Tetrernia*, n. g. (*Hydrocampidae*), for *T. teminitis*, n. sp., Queensland ; MEYRICK, p. 1109, P. Linn. Soc. N.S.W. (2) iv.

↓ *Tetridia*, n. g. ; type, *Botys vinacealis*, Moore ; WARREN, p. 477, Ann. N. H. (6) vi.

↓ *Tretopteryx*, n. n. to replace *Eurrhysis*, Gn., nec Hb. ; RAGONOT, p. xciii, Bull. Soc. Ent. Fr. 1890.

↓ *Therapne*, n. g., for *Stemmatophora obsoletalis*, Mn. ; RAGONOT, p. xciii, Bull. Soc. Ent. Fr. 1890.

↓ *Thylacophora*, n. g. (*Chrysauginae*), p. 490, for *T. tortricoidalis*, Cayenne, p. 491, and *hepaticalis*, Pebas, p. 492, n. spp. ; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

↓ *Thliptoceras*, n. g. (*Hapaliides*), for *T. variabilis*, p. 274, *calvatalis* [cf. ELWES, t. c. p. 601], *epicrocalis*, p. 275, n. spp., Burma ; WARREN, Tr. E. Soc. 1890 (the two last species by SWINHÖE).

↓ *Tlascala*, n. g. ; type, *Nephopteryx reductella*, Wlk. ; HULST, p. 146, Tr. Am. Ent. Soc. xvii.

Toccolosida, position and characters ; SNELLEN, Tr. E. Soc. 1890, p. 559.

T. ? pallifrons, Sikkim, SNELLEN, Tr. E. Soc. 1890, p. 560, n. sp.

Tosale = (*Siparocera*, Grote) *moritzi*, St. Thomas, RAGONOT, Ann. Soc. Ent. Fr. (6) x, p. 500, n. sp.

↓ *Turania*, n. g. (*Pyraustinae*); type, *pentodontalis*, Ersch.; RAGONOT, p. 449, Ann. Soc. Ent. Fr. (6) x.

↓ *Ulophora*, n. g. (*Phycites*), for *U. grotei*, n. sp., North Carolina; RAGONOT, p. vii, Bull. Soc. Ent. Fr. (6) x.

↓ *Unadilla*, n. g. (*Phycitidæ*), for *U. nasutella*, n. sp., New Mexico; HULST, p. 197, Tr. Am. Ent. Soc. xvii.

↓ *Volusia*, n. g. (*Peoriinae*), for *V. roseopennella*, n. sp., Florida; HULST, p. 206, Tr. Am. Ent. Soc. xvii.

↓ *Wekiva*, n. g. (*Phycitidæ*), for *W. nodosella*, n. sp., Florida; HULST, p. 215, Tr. Am. Ent. Soc. xvii.

↓ *Xantippe*, n. g. (*Endotrichiinae*), p. 532, for *X. auropurpuralis*, n. sp., Petropolis, p. 533; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

↓ *Zanclodes*, n. g. (*Chrysauginæ*), p. 74, for *Z. fulculalis*, n. sp., Brazil, p. 475; RAGONOT, Ann. Soc. Ent. Fr. (6) x.

Zebronia, Hb.; to be used instead of *Ledereria*, Sn.: *Pycnarmon zebralis*, Moore, referred to it; SNELLEN, Tr. E. Soc. 1890, p. 631.

Z. rigidalis, Sikkim, SNELLEN, p. 631, Tr. E. Soc. 1890, n. sp.

TORTRICIDÆ.

[Cf. BREIGNET (83), CALVERT (108), DISQUÉ (169), EPPELSHEIM (230), MÖSCHLER (558), WALSINGHAM (838), WEYMER & MAASSEN (911).]

WALLENGREN continues his work on Scandinavian *Tortricidæ*; Ent. Tidskr. xi, pp. 145–194.

Antithesia montana, Chili, CALVERT, Nuev. Lep. p. 15, pl., fig. 4, n. sp.

↓ *Apinoglossa*, n. g., near *Tortrix*, for *A. comburana*, n. sp., Portorico; MÖSCHLER, p. 331, Abh. Senck. Ges. xvi.

Carpocapsa saltitans, note on; ASCHERSON, SB. nat. Fr. 1889, p. 189.

*Catoptria scopoli*ana, var. = (*parvulana*, Wilk.); BARRETT, Ent. M. M. (2) i, p. 70.

Cochylis prolectana, *tectonica*, p. 332, *vicinitana*, p. 333, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, n. spp.

Conchylis aneana, larva noticed; DISQUÉ, S. E. Z. li, p. 56.

Ctenopseustis obliquana, destructive in New Zealand; BARRETT, Ent. M. M. (2) i, p. 217.

Eupæcilia notulana, variation of; RICHARDSON, Ent. M. M. (2) i, p. 299.

Grapholitha (*Semasia*) *swinhoeiana*, Rangoon, WALSINGHAM, Tr. E. Soc. 1890, p. 294, pl. viii, fig. 19; *G. longipalpana*, *excitana*, Portorico, MÖSCHLER, p. 333, Abh. Senck. Ges. xvi : n. spp.

*Halonota cirsi*ana, habits of; RICHARDSON, Ent. M. M. (2) i, p. 299.

Penthina rivulana, Scop., n. var. *stangeana*, *lacunana*, Scop., n. var. *hoffmanniana*; TEICH, S. E. Z. li, p. 49. *P. arcuella*, metamorphoses; CHRÉTIEN, Le Nat. xii, p. 66.

Phoxopteryx upupana, food-plant; BOWER, Ent. M. M. (2) i, p. 192 : larva described; *id. t. c.* p. 328.

P. virididorsana, Portorico, MÖSCHLER, p. 334, Abh. Senck. Ges. xvi, n. sp.

Retinia resinella, habits; ADKIN, Ent. xxiii, p. 76, and P. S. Lond. E. Soc. 1888-89, pp. 160-163, pl., fig. 12 & 13.

Sericoris buoliana, metamorphoses; PISSOT, Le Nat. xii, p. 245.

Teras fimbrianum, *lubricanum*, larvæ noticed; DISQUÉ, S. E. Z. li, p. 86.

Tortrix transitana, habits; FENN, Ent. M. M. (2) i, p. 216.

T. labatiana, Gironde, BREIGNET, Bull. Soc. Ent. Fr. 1890, p. cxlii [*cf.* CONSTANT, t. c. p. clv]; *T. effætana*, *insignitana*, Portorico, MÖSCHLER, p. 330, Abh. Senck. Ges. xvi; *T. staudingerana*, Colombia, MAASSEN, in Stübel Reise, p. 171, pl. ix, fig. 29 : n. spp.

TINEIDÆ.

[*Cf.* CALVERT (108), CONSTANT (140), FYLES (288), HOFMANN (371), MEYRICK (534, 537), MÖSCHLER (558), MURTFELDT (561), RICHARDSON (682, 683), SCUDDER (754), STAINTON (827, 828), TEICH (845), WALSHINGHAM (876, 877), WEYMER & MAASSEN (911), WOOD (923).]

Acrolophus walsinghami, Portorico, MÖSCHLER, p. 336, Abh. Senck. Ges. xvi, n. sp.

Adela; synonymy of the N. American species; WALSHINGHAM, *Ins. Life*, ii, pp. 284 & 285.

Adela punctiferella, Los Angeles, p. 284, *æruinosella*, Louisiana, p. 285; WALSHINGHAM, *Ins. Life*, ii, n. spp.

Agriocoma mimulina, n. var. *araucanus*; CALVERT, *Nuev. Lep.* p. 15.

Agriophara gravis, *horridula*, *capnodes*, p. 77, *axesta*, p. 79, *fascifera*, p. 80, Australia, MEYRICK, Tr. R. Soc. S. Austr. xiii, n. spp.

Anaphora popeanella injuring Indian corn; *Ins. Life*, iii, p. 27.

Argyresthia cupressella, p. 118 (larva, COQUILLETT, p. 116), *freyella*, *plicipunctella*, p. 119, N. America; WALSHINGHAM, *Ins. Life*, iii, n. spp.

Batrachedra albistrigella, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 345, n. sp.

Bucculatrix helichrysella, p. 13, pl. i, fig. 10, *alaternella*, p. 14, fig. 11, S. France; CONSTANT, Ann. Soc. Ent. Fr. (6) x, n. spp.

Butalis parvella, *seliniella*, *senescens*, p. 207, *palustris*, *fallacella*, p. 208, pl. 1, fig. 1, *fuscocuprea*, p. 209, *fuscoænea*, p. 210, external characters of ♀ described; HOFMANN, S. E. Z. li.

Cacochroa permixtella, metamorphoses; CONSTANT, Ann. Soc. Ent. Fr. (6) x, p. 8, pl. i, fig. 5.

Ctenogenes ? *ochracea*, Portorico, MÖSCHLER, p. 337, Abh. Senck. Ges. xvi, n. sp.

Ctortryctis, n. g., *Xyloryctidæ*, p. 42, for *Æcophora subparallela*, *subnexella*, Wlk., and *C. eugramma*, p. 43, *tricrena*, p. 44, n. spp., Australia; MEYRICK, Tr. R. Soc. S. Austr. xiii.

Chalarotona, n. g., *Xyloryctidæ*, p. 64, for *C. intabescens*, *melipnoa*, p. 65, *melitoleuca*, Australia, *insincera*, Tasmania, *craspedota*, S. Australia, p. 66, n. spp.; MEYRICK, Tr. R. Soc. S. Austr. xiii.

✓*Clerarcha*, n. g., *Xyloryctidæ*, for *C. grammastis*, p. 53, *agana*, *dryinopa*, p. 54, n. spp., Australia; MEYRICK, Tr. R. Soc. S. Austr. xiii.

Coleophora, notes on larvæ and cases; SCHMID, Soc. Ent. iv, pp. 160, &c.

C. santolinella, Corsica; CONSTANT, p. 11, pl. i, fig. 8, Ann. Soc. Ent. Fr. (6) x, n. sp.

✓*Compsotorna*, n. g., *Xyloryctidæ*, for *C. oligarchica*, n. sp., Queensland; MEYRICK, p. 41, Tr. R. Soc. S. Austr. xiii.

✓*Coptotriche*, n. g., for *Tischeria complanoides*, F. & B.; WALSHINGHAM, Ins. Life, ii, p. 322.

✓*Crypsicharis*, n. g., *Xyloryctidæ*, for *C. neocosma*, n. sp., Queensland; MEYRICK, p. 45, Tr. R. Soc. S. Austr. xiii.

✓*Cryptophaga*, n. n. for *Cryptophasa*, Lw.; MEYRICK, p. 27, Tr. R. Soc. S. Austr. xiii.

Cryptophaga hierastis, *dolerastis*, *stochastis*, W. Australia, p. 30, *epigramma*, *proleuca*, S. Australia, p. 31, *phaëthontia*, *epadelpha*, p. 36, Queensland, *rubra*, *lurida*, S. Australia, *sarcinota*, Queensland, p. 37, *delocentra*, Sydney, p. 38, MEYRICK, Tr. R. Soc. S. Austr. xiii, n. spp.

✓*Euarne*, n. g., *Hyponomeutidæ*, for *E. obligatella*, n. sp., Portorico; MÖSCHLER, Abh. Senck. Ges. xvi.

Gelechia portlandicella, Portland, RICHARDSON, Ent. M. M. (2) i, p. 29; *G. tristella*, Baltic, TEICH, Arb. Ver. Riga (n.s.), vi, p. 108; *G. gallædiplopappi*, N. America, FYLES, Canad. Ent. xxii, p. 248; *G. exclarella*, p. 343, *costipunctella*, *rivulella*, p. 344, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi; *G. xanthosomella*, Bolivia, MAASSEN, in Stübel Reise, p. 172, pl. ix, fig. 30 : n. spp.

Gracilaria syringella, metamorphoses; PISSOT, Le Nat. xii, p. 141. *G. populetorum*, *elongella*, *falconipennella*, larvæ described; WOOD, Ent. M. M. (2) i, pp. 133-137.

✓*Hypertricha*, n. g., *Xyloryctidæ*, for *H. ephelota*, n. sp., Adelaide; MEYRICK, p. 74, Tr. R. Soc. S. Austr. xiii.

Hyponomeuta triangularis, Portorico, MÖSCHLER, Abh. Senck. Ges. xvi, p. 339; *H. rutila*, Chili, CALVERT, Nuev. Lep. p. 14, n. spp.

✓*Lichenaula*, n. g., *Xyloryctidæ*, p. 46, for *L. laniata*, p. 47, *arisema*, *calligrapha*, p. 48, *lichenæa*, *lithina*, p. 49, *choriodes*, *tuberculata*, p. 50, New South Wales, *musica*, Australia, p. 51, *mochlias*, Melbourne, p. 52, n. spp.; MEYRICK, Tr. R. Soc. S. Austr. xiii.

Lita (*Gelechia*) *junctella*, characters noticed; TUTT, Ent. Rec. i, p. 7.

L. crespusculella, Baltic, TEICH, Arb. Ver. Riga (n.s.), vi, p. 111; *L. cistiflorella*, p. 5, pl. i, fig. 1, *delphinatella*, fig. 2, *behenella*, fig. 3, p. 6, S. France, CONSTANT, Ann. Soc. Ent. Fr. (6) x : n. spp.

Lithocolletis endryella, Mann., = (*caudiferella*, Rag.); *L. endryella* and *ilicifoliella*, distinctive characters of; WALSHINGHAM, Bull. Soc. Ent. Fr. (6) x, p. viii.

L. joviella, S. France, CONSTANT, p. 12, pl. i, fig. 9, Ann. Soc. Ent. Fr. (6) x, n. sp.

Maroga setiotricha, Queensland, p. 40, *mythica*, Sydney, p. 41, MEYRICK, Tr. R. Soc. S. Austr. xiii, n. spp.

Menesta melanella, N. America, MURTFELDT, *Ins. Life*, ii, p. 304, n. sp.

Micropteryx, oviposition and life-history of some species of ; WOOD, *Ent. M. M.* (2) i, pp. 148-150. *M. unimaculella*, *purpurella*, *semipurpurella*, *kaltenbachii*, *salopiella*, *sparmanella*, larvæ described ; WOOD, *t. c.* pp. 1-6.

Nepticula gei, Wk., and *fragariella*, Heyd., characters of discussed ; EPPELSHEIM, *S. E. Z.* li, pp. 229-235.

N. torminalis, England, WOOD, *Ent. M. M.* (2) i, p. 209 ; *N. auromarginella*, Weymouth, RICHARDSON, *t. c.* p. 30 : n. spp.

✓ *Notosara*, n. g., *Xyloryctidæ*, for *N. nephelotis*, n. sp., W. Australia ; MEYRICK, p. 52, *Tr. R. Soc. S. Austr.* xiii.

Opostega salaciella, habits ; BANKES, *Ent. M. M.* (2) i, p. 8.

Æcophora temperatella, larva and its ravages in Cyprus described ; SHIPLEY, *Kew Bull.* No. 30, p. 133. *Æ. scholæa*, larva noticed ; MEYRICK, p. 220, *Tr. N. Z. Inst.* xxii.

Æ. ardosiella, Corsica, pl. i, fig. 6, *Æ. ? incolorella*, fig. 7, S. France, CONSTANT, p. 10, *Ann. Soc. Ent. Fr.* (6) x ; *Æ. nycteris*, New Zealand, MEYRICK, p. 219, *Tr. N. Z. Inst.* xxii : n. spp.

✓ *Pexicnemidia*, n. g., p. 337, position doubtful, possibly a distinct family, for *P. mirella*, n. sp., Portorico, p. 338 ; MÖSCHLER, *Abh. Senck. Ges.* xvi.

✓ *Phthonerodes*, n. g., *Xyloryctidæ*, p. 44, for *P. scotarcha*, n. sp., S. Australia, p. 45 ; MEYRICK, *Tr. R. Soc. S. Austr.* xiii.

✓ *Phylomictis*, n. g., *Xyloryctidæ*, p. 74, for *P. maligna*, n. sp., Melbourne, p. 75 ; MEYRICK, *Tr. R. Soc. S. Austr.* xiii.

✓ *Pilostibes*, n. g., *Xyloryctidæ*, p. 26, for *P. stigmatias*, *enchidias*, n. spp., N. S. Wales, p. 27 ; MEYRICK, *Tr. R. Soc. S. Austr.* xiii.

✓ *Plectophila*, n. g., *Xyloryctidæ*, for *Æcophora electella* and *Acontia discalis*, Wlk. ; MEYRICK, p. 54, *Tr. R. Soc. S. Austr.* xiii.

✓ *Procometis*, n. g., *Xyloryctidæ*, for *P. bisulcata*, p. 71, *monocalama*, *liparis*, *hylonoma*, p. 72, *genialis*, *diplocentra*, p. 73, n. spp., Australia ; MEYRICK, *Tr. R. Soc. S. Austr.* xiii.

Pseudadia aureoapicella, p. 341, *kirbyi*, p. 342, *ingricella*, p. 343, pl., fig. 19, Portorico ; MÖSCHLER, *Abh. Senck. Ges.* xvi. *P.* fossil sp., see Palæontology.

Scieropepla polyxesta, Australia and Tasmania, p. 67, *acrates*, *liophanes*, p. 68, *rimata*, *silvicola*, p. 69, *serina*, *oxyptera*, p. 70, Australia, MEYRICK, *Tr. R. Soc. S. Austr.* xiii, n. spp.

Simaethis combinatana, Wlk., life-history ; HUDSON, *Ent. M. M.* (2) i, p. 22. *S. pariana*, hibernation of ; BOWER, *t. c.* p. 271.

Stathmopoda caminora, New Zealand, MEYRICK, *Tr. N. Z. Inst.* xxii, p. 219, n. sp.

Swammerdamia lutarea, larva of ; WOOD, *Ent. M. M.* (2) i, p. 102.

Symmoca signatella, larva noticed ; DISQUE, *S. E. Z.* li, p. 88.

Tachyptilia trifoliella, S. France, CONSTANT, p. 7, pl. i, fig. 4, *Ann. Soc. Ent. Fr.* (6) x, n. sp.

✓ *Telecrates*, n. g., *Xyloryctidæ*, p. 61, for the following n. spp. from Australia : *melanula*, p. 62, *calligramma*, *micraema* (Tasmania), p. 64 ; also

some species of *Æcophora* and *Cryptolechia*, Wlk. ; MEYRICK, Tr. R. Soc. S. Austr. xiii.

Tinagma betulæ, England, STANTON, Ent. M. M. (2) i, p. 264 ; life-history, WOOD, t. c. p. 261, n. sp.

Tinea pellionella, *tapetzella*, *biselliella*, in N. America ; RILEY, Ins. Life, ii, pp. 211–213.

Tischeria : notes on the N. American species ; *T. citripennella*, Clem., = (*badiella*, Chamb.), *quercitella*, Clem., = (*quercivorella*, Chamb.), *heliopsiella*, Chamb., = (*nolckenii*, F. & B.) ; WALSINGHAM, Ins. Life, ii, pp. 323–326.

T. ceanothi, N. America, WALSINGHAM, Ins. Life, ii, p. 325, n. sp.

√ *Tymbophora*, n. g., *Xyloryctidæ*, for *T. peltastis*, n. sp., Australia ; MEYRICK, p. 56, Tr. R. Soc. S. Austr. xiii.

Xyloryctidæ: *Cryptolechiidæ* to be replaced by this name ; MEYRICK, Tr. R. Soc. S. Austr. xiii, p. 24 ; tabulation of the genera, pp. 24 & 25.

√ *Xylorycta*, n. g., *Xyloryctidæ*, p. 57, for *X. ophiogramma*, p. 58, *synaula*, p. 59, *orectis*, *cosmopis*, p. 60, n. spp., Australia, and including *Cryptophasa strigata*, Lw., and *Cryptolechia argentella* and *luteotactella*, Wlk. ; MEYRICK, Tr. R. Soc. S. Austr. xiii.

Ypsolophus manellus, Portorico, MÜSCHLER, p. 344, Abh. Senck. Ges. xvi, n. sp.

PTEROPHORIDÆ and ALUCITIDÆ.

[Cf. MEYRICK (533, 536), MÜSCHLER (558).]

Notes on the synonymy of Haworth's *Pterophoridaæ* ; TUTT, Ent. Rec. i, pp. 90–94.

Alucita xanthodes, *pygmæa*, Queensland, MEYRICK, p. 1112, P. Linn. Soc. N.S.W. (2) iv, n. spp.

√ *Crasimetis*, n. g., for *brachydactyla*, Tr., and *amurensis*, Christ. ; MEYRICK, Tr. E. Soc. 1890, p. 489.

√ *Gypsocheres*, n. g., for *baptodactyla*, Z. ; MEYRICK, Tr. E. Soc. 1890, p. 488.

Øldematophorus basalis, Portorico, MÜSCHLER, p. 345, Abh. Senck. Ges. xvi, n. sp.

Platyptilia ochrodactyla and *bertrami* are one species ; HEYLAERTS, Tijdschr. Ent. xxxiii, p. xxiii.

Pterophorus bipunctatus, *præustus*, Portorico, MÜSCHLER, Abh. Senck. Ges. xvi, n. spp.

Trichoptilus pyrrhodes, Queensland, MEYRICK, p. 1113, P. Linn. Soc. N.S.W. (2) iv, n. sp.

(D.) *DIPTERA*.

[*Cf.* BECKER (39, 40), BIDENKAP (54), BIGOT (55, 56, 57), BRAUER (80, 81), BRAUER & BERGENSTAMM (82), COCKERELL (135, 136), COQUILLET (146), FICALBI (255, 256, 257), FOCKEU (270), GEHUCHTEN (298), GERCKE (299), GIGLIO-TOS (304, 305, 306, 307), GILLETTE (310), GRABER (321), HAMILTON (346), HUDSON (386), HURST (390), KIEFFER (423-427), KUSNETZOV (463), LAMPA (474), LANGHOFFER (475), LÉON (481), LOWNE (492), MEINERT (521, 522, 523, 524, 527), MIK (538-542), RASPAIL (640), RITTER (702), RÖDER (707) RÜBSAAMEN (714, 715, 716), SCHNABL (743, 744, 745), SCHOCK (748), SENTENIS (787, 788), SKUSE (791, 792), SMITH (803, 816), STEIN (835, 836), THOMAS (849), VERRALL (860), WEINLAND (899), WHEELER (914, 915), WILHELM (918), WULF (317).]

Anatomy of mouth; LANGHOFFER (475).

SMITH (803) gives a fresh interpretation of the structure and homologies of the mouth parts, stating that the proboscis and its labellate development are maxillary, &c.

Note on the nomenclature of the venation; OSTEN-SACKEN (quoted by Skuse), *P. Linn. Soc. N.S.W.* (2) v, pp. 596-598.

Note on the connecting-links between different groups of *Diptera*, and on their palæontological succession; BRAUER (80).

Anatomy and functions of the *Halteres*; WEINLAND (899).

Embryology; GRABER (321).

Fossil *Diptera*; SCUDDER (754).

Bigot's classification discussed; BECKER, *Wien. ent. Z.* ix, p. 32.

Summary of dipterological papers in vols. i-ix of *Wien. ent. Z.*; *op. cit.* ix, pp. 281-308.

For a new insect supposed to be intermediate between *Diptera* and *Hemiptera*, *cf. Rhynchota* and LÉON (481).

CECIDOMYIIDÆ.

Galls of *Cecidomyiidae*, notes on; HARKER (351).

Cecidomyid galls on *Phyteuma hemisphaericum*, *Veronica saxatilis*, and *Campanula rotundifolia*, figured and described; MIK, *Wien. ent. Z.* ix, pp. 233-238, pls. i & ii.

Asphondylia mikii, note on; KIEFFER, *Wien. ent. Z.* ix, p. 31.

A. melanopus, Germany, KIEFFER, Wien. ent. Z. ix, p. 31, n. sp.

Campylomyza grandiuscula, Sydney, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 388, n. sp.

Cecidomyia bryoniæ, p. 203, *raphanistri, strobi*, p. 204, descriptive notes ; *trifolii, viscaria*, habits, &c., p. 206 ; KIEFFER, Verh. z.-b. Wien, xl. *C. rigida*, O.-S., p. 278, *salicis-batatas*, Walsh, p. 279, *salicis-brassicoides*, p. 280, descriptive notes on ; COCKERELL, Ent. xxiii. *C. buxi*, habits ; DECAUX, Bull. Soc. Ent. Fr. 1890, p. lxxviii. *C. rosaria*, Löw, noticed ; MEIJERE, Tijdschr. Ent. p. xxvii. *C. syngenesiæ*, Lw., redescribed ; KIEFFER, Ent. Nachr. xvi, p. 29.

C. pseudococcus, Ohrdruf, THOMAS & RÜBSAAMEN, Verh. z.-b. Wien, xl, pp. 301-310, pl. vi, and t. c. p. 65, SB. ; *C. florum*, Bitsch, KIEFFER, Ent. Nachr. xvi, p. 37 ; *C. flosculorum*, p. 200, *iteobia*, p. 201, Bitsch, *id.* Verh. z.-b. Wien, xl ; *C. sanguisorbæ*, p. 26, *peinei*, p. 27, Germany, RÜBSAAMEN, Wien. ent. Z. ix ; *C. lathyricola*, p. 26, *lathyrina*, p. 28, Germany, *id.* Verh. Ver. Rheinl. xlvii ; *C. acaciæ-longifoliæ*, p. 374, *nubilipennis*, p. 375, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v ; *C. negundinis*, N. America, GILLETTE, p. 392, Psyche, v ; *C. bigeloviae*, Colorado, COCKERELL, Ent. M. M. (2) i, p. 109 ; *C. frater*, p. 280, *alticola*, p. 281, Colorado, *id.* Ent. xxiii : n. spp.

Clinorrhyncha chrysanthemi, Lw., redescribed ; KIEFFER, Ent. Nachr. xvi, p. 30.

Diplosis scoparii and *pulsatillæ*, habits noticed ; KIEFFER, Verh. z.-b. Wien, xl, p. 203. *D. liriodendri*, habits, Ins. Life, ii, p. 362.

D. barbichi, galls on *Lotus* in Germany, KIEFFER, Wien. ent. Z. ix, p. 29 ; *D. dryophila*, p. 197, *ruderalis*, p. 198, Bitsch, KIEFFER, Verh. z.-b. Wien, xl ; *D. tiliarum*, p. 193, *pallescens*, p. 196, Centr. Europe, KIEFFER, Ent. Nachr. xvi ; *D. pulchripes*, p. 133, *anthonoma*, p. 135, Bitsch, in galls on *Sarothamnus*, KIEFFER, Wien. ent. Z. ix ; *D. incana*, p. 20, *quercina*, p. 21, Germany, RÜBSAAMEN, Verh. Ver. Rheinl. xlvii ; *D. freneleæ*, p. 377, *albulipennis*, p. 378, *helmsi*, p. 379, *eucalypti*, p. 381, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v : n. spp.

Epidosis helveola, Germany, RÜBSAAMEN, Verh. Ver. Rheinl. xlvii, p. 18 ; *E. grandipennis*, Sydney, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 384 : n. spp.

Hormomyia rubra, Bitsch, KIEFFER, Verh. z.-b. Wien, xl, p. 199 ; *H. palearum*, Bitsch, KIEFFER, Ent. Nachr. xvi, p. 28 ; *H. omalanthi*, N. S. Wales, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 383 : n. spp.

Lasioptera sarothamni, Bitsch, KIEFFER, Wien. ent. Z. ix, p. 136 ; *L. virgata*, p. 386, *wildi*, p. 387, Australia, SKUSE, P. Linn. Soc. N.S.W. (2), v : n. spp.

Lestremia sydneyensis, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 389, n. sp.

Schizomyia galiorum, note on habits ; KIEFFER, Verh. z.-b. Wien, xl, p. 202.

Spaniocera australis, N. S. Wales, SKUSE, p. 385, P. Linn. Soc. N.S.W. (2) v, n. sp.

MYCETOPHILIDÆ.

Acrodicrania angustifurca, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 616, n. sp.

Brachydicrania fascipennis, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 628, n. sp.

Ceroplatus pentophthalmus, Italy, GIGLIO-TOS, Boll. Mus. Tor. No. 84, pl. ii, figs. 1 & 2, and Riv. Ital. Sci. Nat. x, p. 142, n. sp.

†Clastobasis, n. g., near *Leia*, p. 617, for *C. tryoni*, n. sp., Queensland, p. 619, SKUSE, P. Linn. Soc. N.S.W. (2) v.

†Delopsis, n. g., near *Mycetophila*, p. 623, for *D. flavipennis*, n. sp., Australia, p. 624; SKUSE, P. Linn. Soc. N.S.W. (2) v.

Ditomyia pallida, Turin, *zonata*, *mexicana*, Mexico, GIGLIO-TOS, Boll. Mus. Tor. No. 84, and pp. 142 & 143, Riv. Ital. Sci. Nat. x, n. spp.

Dynatosoma sydneyensis, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 627, n. sp.

Heteropterna affinis, N. S. Wales, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 601, n. sp.

†Lygistorrhina, n. g., p. 598, for *L. insignis*, n. sp., N. S. Wales, p. 600; SKUSE, P. Linn. Soc. N.S.W. (2) v.

Mycetophila nigriventris, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 622, n. sp.

Neoempheria signifera, N. S. Wales, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 611, n. sp.

Platygura minima, Italy, GIGLIO-TOS, Riv. Ital. Sci. Nat. x, p. 143; *P. contingens*, p. 602, *gracilis*, p. 603, *richmondensis*, p. 604, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v : n. spp.

Sceptonia ornatithorax, Sydney, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 621, n. sp.

Sciara recondita, p. 390, *tryoni*, p. 391, *tepperi*, p. 393, *promiscua*, p. 394, *contermina*, p. 395, *flavicoxis*, p. 396, *exposita*, p. 397, *adjuncta*, p. 398, *marginata*, p. 399, *infixa*, p. 400, *consanguinea*, p. 401, *serenipennis*, p. 402, *conjuncta*, p. 403, *præcellens*, p. 404, *crassicornis*, p. 407, *helmsi*, p. 408, *exsequialis*, p. 409, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, n. spp.

Sciophila mccoysi, p. 606, *pictithorax*, p. 607, *richmondensis*, p. 608, *humeralis*, p. 609, *sylvicola*, p. 610, Australia; SKUSE, P. Linn. Soc. N.S.W. (2) v, n. spp.

†Stenophragma, n. n. for *Homaspis*, Sk., nec Först., with *S. picticornis*, p. 613, *kirtipennis*, p. 614, n. spp., Australia; SKUSE, P. Linn. Soc. N.S.W. (2) v.

†Synplasta, n. g., near *Brachydicrania*, p. 629, for *S. annuliventris*, n. sp., p. 630, Australia; SKUSE, P. Linn. Soc. N.S.W. (2) v.

Zygoneura maculipennis, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 411, n. sp.

SIMULIIDÆ.

Simulium ornatipes, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 632, n. sp.

BIBIONIDÆ.

Bibio albipennis, note on its times of appearance ; TOWNSEND, P. E. Soc. Wash. i, p. 260. *B. anglicus*, nomenclatorial note ; RÖDER, Ent. Nachr. xvi, p. 313.

Dilophus serotinus, time of appearance ; TOWNSEND, P. E. Soc. Wash. i, p. 262.

D. graciosus, Dharmasala, BIGOT, p. 265, J. A. S. B. lix, pt. 2 ; *D. varipes*, p. 635, *lecticollis*, p. 637, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v : n. spp.

Scatopse richmondensis, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 639, n. sp.

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✓ *Agathon*, n. g., p. 230, for *A. elegantulus*, n. sp., California, p. 232 ; RÖDER, Wien. ent. Z. ix.

CULICIDÆ.

Culex sp., anatomy of pupa described ; HURST (390). *C. argyropus*, swarm of ; SMITH, Ent. M. M. (2) i, p. 320. *C. spathipalpis*, Rond., described at length ; FICALBI, Bull. Ent. Ital. xxi, pp. 86–92. *C. pipiens*, the supposed intestinal parasitism of larva ; FICALBI (255, 256).

C. modestus, p. 93, *elegans*, p. 95, *phytophagus*, p. 126, Italy, FICALBI, Bull. Ent. Ital. xxi ; *C. impudicus*, Sardinia, *id. op. cit.* xxii, p. 81 : n. spp.

CHIRONOMIDÆ.

Chironomus, oviposition, embryology ; RITTER (702) : notes on a halophilous species ; MONIEZ, Rev. Biol. ii, p. 404–408.

Tanypus steinenii, South Georgia Is., GERCKE, JB. Hamb. Aust. vi, p. 153, n. sp.

TIPULIDÆ.

✓ *Acracantha*, n. g., *Tipulina*, p. 109, for *A. sydneyensis*, p. 111, *monticola*, p. 112, *inornata*, p. 113, n. spp., Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v.

Amalopsis nigratarsis, Sydney, SKUSE, p. 888, P. Linn. Soc. N.S.W. (2) iv, n. sp.

✓ *Amphineurus*, n. subg. of *Rhypholophus* ; SKUSE, p. 800, P. Linn. Soc. N.S.W. (2) iv.

Bittacomorpha sackenii, California, RÖDER, Wien. ent. Z. ix, p. 230, n. sp.

Chionea araneoides, abundant occurrence of ; THOMAS, Ent. Nachr. xvi, p. 306.

✓ *Clytocosmus*, n. g. (*Ctenophorina*), p. 74, for *C. helmsi*, n. sp., Australia, p. 76, pl. iv, fig. 5 ; SKUSE, P. Linn. Soc. N.S.W. (2) v.

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Dolichopeza annulipes, p. 61, *niveitarsis*, p. 62, *monticola*, p. 63, *planidigitalis*, *longifurca*, pl. iv, fig. 1, p. 65, *brevifurca*, p. 66, *varipes*, fig. 2, p. 67, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, n. spp.

Erioptera ochracea, Australia, SKUSE, p. 819, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Geranomyia picta, p. 778, *G. (Triphana) lutulenta*, p. 779, *annulata*, *G. (Tetraphana) fusca*, p. 780, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Gonomyia leucophæa, Sydney, SKUSE, p. 826, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Gnophomyia (sub *Limnobia*) *fascipennis*, Th., = (*cordialis*, O.-S.); SKUSE, p. 824, P. Linn. Soc. N.S.W. (2) iv.

Gynoplistia obscurivena, p. 867, *westwoodi*, p. 871, Australia, *howensis*, Lord Howe I., p. 872, *bimaculata*, p. 875, *flavipennis*, p. 877, *macquarti* = (*cyanea*, Macq.), p. 881, *viridithorax*, p. 882, *chalybeia*, p. 884, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, n. spp.

† *Habromastix*, n. g., *Tipulina*, p. 93, for *H. cinerascens*, p. 94, *ornatipes*, p. 95, n. spp., Australia, and *Tipula remota*, Wlk.; SKUSE, P. Linn. Soc. N.S.W. (2) v.

Holorusia conspicabilis, Queensland, SKUSE, P. Linn. Soc. N.S.W. (2) v, 120, n. sp.

✓ *Ischnotoma*, n. g., *Tipulina*, for *Tip. serricornis*, *rubriventrís*, Macq., and *Ptilogyna par*, Wlk.; SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 114.

✓ *Lechria*, n. g., near *Gonomyia*, p. 830, for *L. singularis*, n. sp., Australia, p. 831, SKUSE, P. Linn. Soc. N.S.W. (2) iv.

✓ *Leiponeura*, n. g., near *Antocha*, O.-S., p. 795, for *L. gracilis*, p. 796, *brevivena*, p. 797, n. spp., Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv.

Leptotarsus scutellaris, p. 107, *trivittata*, p. 108, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, n. spp.

Limnobia microcephala, Thoms., referred to *Trimicra*; SKUSE, p. 822, P. Linn. Soc. N.S.W. (2) iv.

L. bidentata, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, p. 782, n. sp.

Limnophila leucophæata, p. 840, *obscuripennis*, p. 841, *disposita*, *aureola*, p. 843, *ocellata*, p. 845, *rostrifera*, p. 846, *imitatrix*, p. 847, *antiqua*, p. 849, *interventa*, p. 850, *inordinata*, p. 851, *luctuosa*, p. 854, *levidensis*, p. 855, *lawsonensis*, p. 856, *australasiae*, p. 858, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Macromastix helmsi, p. 132, *mastersi*, p. 133, *constricta*, p. 134, *obscurirostris*, p. 135, *humilis*, p. 136, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) v, n. spp.

Molophilus ruficollis, p. 804, *femoratus*, *helmsi*, p. 805, *notatipennis*, p. 806,

froggatti, p. 807, *montivagus*, *gracilis*, p. 808, *annulipes*, p. 809, *flavonotatus*, p. 810, *translucens*, *canus*, p. 811, *pulchripes*, p. 812, *pervagatus*, *lucidipennis*, p. 813, *longicornis*, p. 814, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Orimarga australis, p. 793, *inornata*, p. 794, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Pachyrrhina sp., habits in Indiana; WEBSTER, Ins. Life, iii, p. 12.

P. australasie, Queensland, SKUSE, P. Linn. Soc. N.S.W. (2) v, p. 126, n. sp.

† *Phymatopsis*, n. g., *Tipulina*, p. 97, for *P. nigrirostris*, n. sp., Sydney, p. 98; SKUSE, P. Linn. Soc. N.S.W. (2) v.

† *Platyphasia*, n. g. (*Tipulina*), p. 84, for *P. princeps*, n. sp., Australia, p. 85; SKUSE, P. Linn. Soc. N.S.W. (2) v.

† *Plusiomyia*, n. g. (*Tipulina*), p. 86, for *P. olliffi*, p. 89, *spectabilis*, p. 90, *lineata*, p. 91, *inornata*, p. 92, n. spp., Australia, and including *Pedicia gracilis*, Wlk.; SKUSE, P. Linn. Soc. N.S.W. (2) v.

Ptychoptera contaminata, alimentary canal of; GEHUCHTEN (298).

† *Rhabdomastix*, n. g., near *Gonomyia*, p. 828, for *R. osten-sackeni*, n. sp., Australia, p. 829; SKUSE, P. Linn. Soc. N.S.W. (2) iv.

Rhamphidia communis, p. 788, *fulvithorax*, p. 789, *venusta*, p. 790, *niveitarsis*, p. 791, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Rhypholophus (*Amphineurus*) *umbraticus*, p. 801, *maculosus*, p. 802, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iv, n. spp.

Tanypremna fastidiosa, Australia, SKUSE, p. 69, pl. iv, fig. 3, P. Linn. Soc. N.S.W. (2) v, n. sp.

† *Tasiocera*, n. g., near *Molophilus*, p. 815, for *T. tenuicornis*, p. 816, *gracilis*, p. 817, n. spp., Australia; SKUSE, P. Linn. Soc. N.S.W. (2) iv.

† *Tetraphana*, n. subg. of *Geranomyia*; SKUSE, P. Linn. Soc. N.S.W. (2) iv, p. 778.

Teucholabis meridiana, Australia, SKUSE, p. 798, P. Linn. Soc. N.S.W. (2) iv, n. sp.

† *Thrypticomysia*, n. g., near *Dicranomyia*, p. 774, for *T. aureipennis*, n. sp., Sydney, p. 775; SKUSE, P. Linn. Soc. N.S.W. (2) iv.

Tipula subsericornis, Zett., is *Prionocera turcica*, F., not *T. serricornis*, Zett.; MIK, Wien. ent. Z. ix, p. 154. *T. novaræ*, swarm of; SMITH, Ent. M. M. (2) i, p. 321.

Trentepohlia, notes on the genus and species; SKUSE, pp. 831-833, P. Linn. Soc. N.S.W. (2) iv.

T. australasie, Queensland, SKUSE, p. 834, P. Linn. Soc. N.S.W. (2) iv, n. sp.

Trichocera maculipennis found in mines; notes on the habits and characters of the Swedish *Trichocera*; LAMPA, Ent. Tidskr. xi, pp. 89-94.

† *Triphana*, n. subg. of *Geranomyia*; SKUSE, p. 777, P. Linn. Soc. N.S.W. (2) iv.

Trocholoba australis, Sydney, SKUSE, p. 784, P. Linn. Soc. N.S.W. (2) iv, n. sp.

LEPTIDÆ.

Atherix unicolor, Curt., and *Ptiolina wodzickii*, Frfld., are synonymous ; VERRALL, Ent. xxiii, p. 153.

Hilarimorpha is a *Leptid* ; OSTEN-SACKEN, B. E. Z. xxxv, p. 303.

Leptis funebris, M., characters of ; BECKER, Wien. ent. Z. ix, p. 65.

Ptiolina (sub *Eurytion*) *paradoxa*, Jänn., = (*wodzickii*, Frn.) ; MIK, Wien. ent. Z. ix, p. 154.

ASILIDÆ.

Asilus fasciatus, Fab., note on ; RÖDER, Ent. Nachr. xvi, p. 109.

Ommatius (sub *Asilus*) *chinensis*, Fab., = (*A. flavescens*, Fab.) ; RÖDER, Ent. Nachr. xvi, p. 89.

BOMBYLIIDÆ.

Anthrax hypomelas, larval habits ; *Ins. Life*, ii, pp. 353 & 354, woodcuts. *A.* sp. parasitic on *Agrotis herilis* ; WEBSTER, p. 44, Bull. Dep. Agric. Ent. xxii.

CYRTIDÆ.

Acrocera sp. parasitic on spiders, noticed and figured ; EMERTON, Psyche, v, p. 404.

EMPIDÆ.

Rhamphomyia dispar, Curt., and *Ocydromia glabricula*, Fln., are synonymous ; VERRALL, Ent. xxiii, p. 153.

R. setigera, Saxony, STEIN, Wien. ent. Z. ix, p. 108, n. sp.

Symbalophthalmus and *Phoneutisca*, distinctive characters ; BECKER, Wien. ent. Z. ix, p. 35.

Tachista ornaticipes, Tyrol, BECKER, Wien. ent. Z. ix, p. 69, n. sp.

Tachydromia mikhii, Gastein, BECKER, Wien. ent. Z. ix, p. 67, n. sp.

DOLICHOPODIDÆ.

Dolichopodidæ : new classification of, with tables of genera in analytical form, suppressing many names and proposing others ; BIGOT (55).

✓ *Amblypsilopus*, n. g. ; type, *Psilopus psittacinus*, Lw. ; BIGOT, p. 269, Ann. Soc. Ent. Fr. (6) x.

✓ *Aphantotimus*, n. g., p. 375, for *A. willistoni*, *fraterculus*, n. spp., Wisconsin, p. 376 ; WHEELER, Psyche, v,

✓ *Calyzochætus*, n. g. ; type, *Sympicnus notatus*, Lw. ; BIGOT, p. 282, Ann. Soc. Ent. Fr. (6) x.

Chrysotimus pusio, ♂ described ; WHEELER, p. 374, Psyche, v.

Chrysotus femoratus, Chili, *rostratus*, Ceylon, BIGOT, p. 295, Ann. Soc. Ent. Fr. (6) x; *C. wisconsinensis*, p. 356, *pratincta*, *choricus*, p. 357, N. America, WHEELER, Psyche, v : n. spp.

Diaphorus satrapa, p. 359, *palpiger*, *rauterbergi*, p. 360, N. America, WHEELER, Psyche, v, n. spp.

Dolichopus albiciliatus, *incongruus*, p. 338, *flagellitenens*, p. 339, *henshawi*, p. 340, *germanus*, p. 341, N. America, WHEELER, Psyche, v, n. spp.

√ *Eudasyptus*, n. g.; type, *Psilopus senegalensis*, Macq.; BIGOT, p. 268, Ann. Soc. Ent. Fr. (6) x.

√ *Gymnoceromyia*, n. g., for *G. andicola*, n. sp., Chili; BIGOT, p. 293, Ann. Soc. Ent. Fr. (6) x.

Gymnopternus poenitens, Wisconsin, WHEELER, p. 355, Psyche, v, n. sp.

Hydrophorus philombrius, Wisconsin, WHEELER, p. 378, Psyche, v; *H. infuscatus*, Chili, BIGOT, p. 294, Ann. Soc. Ent. Fr. (6) x : n. spp.

Mesorhaga torquata, Ceylon, BIGOT, p. 294, Ann. Soc. Ent. Fr. (6) x, n. sp.

Neurigona picticornis, New Caledonia, BIGOT, p. 293, Ann. Soc. Ent. Fr. (6) x, n. sp.

√ *Oariopherus*, n. g.; type, *Psilopus tuberculicornis*, Macq.; BIGOT, p. 270, Ann. Soc. Ent. Fr. (6) x.

√ *Paragymnopternus*, n. g., for part of *Gymnopternus*; BIGOT, p. 281, Ann. Soc. Ent. Fr. (6) x.

√ *Peloropecodes*, n. g., p. 373, for *P. salax*, n. sp., Wisconsin, p. 374, WHEELER, Psyche, v.

Peodes dichromatus, Chili, BIGOT, p. 295, Ann. Soc. Ent. Fr. (6) x, n. sp.

Pacilobothrus mexicanus, redescribed; BIGOT, p. 294, Ann. Soc. Ent. Fr. (6) x.

√ *Psilopodinus*, n. g., near *Psilopus*, p. 289, for the following n. spp., viz.: *polychroma*, Haity, p. 289, *gemma*, Java, p. 290, *dialithus*, Celebes, p. 291, BIGOT, Ann. Soc. Ent. Fr. (6) x.

Psilopus lacteitarsis, Becker, is distinct from *lesinensis*, Mik; MIK, Wien. ent. Z. ix, p. 157. *P. costæ*, n. n. for *eximius*, Costa, *nec* Wlk.; *id.* t. c. p. 158.

P. ætereus, Ternate, p. 283, *setipes*, Indian Archipelago, *armipes*, Bahia, p. 284, *trichosoma*, Brazil, *angulosus*, Australia, *armillatus*, Ceylon, p. 285, *appendiculatus*, Burma, p. 286, *fuscopennatus*, Borneo, *albilimbatus*, W. Africa, p. 287, *noumeanus*, New Caledonia, *chromatipes*, New Guinea, p. 288, BIGOT, Ann. Soc. Ent. Fr. (6) x, n. spp.

√ *Spathichira*, n. g., for *S. pulchrimanus*, n. sp., N. America; BIGOT, p. 292, Ann. Soc. Ent. Fr. (6) x.

√ *Spathiopsilopus*, n. g., for *S. papuasinus*, n. sp., New Guinea; BIGOT, p. 283, Ann. Soc. Ent. Fr. (6) x.

√ *Spathitarsus*, n. g.; type, *Dolichopus discipes*, Ahr.; BIGOT, Ann. Soc. Ent. Fr. (6) x, p. 276.

Xyphandrium discolor, Chili, BIGOT, p. 292, Ann. Soc. Ent. Fr. (6) x, n. sp.

LONCHOPTERIDÆ.

Lonchoptera scutellata, Saxony, STEIN, Wien. ent. Z. ix, p. 109, n. sp.

SYRPHIDÆ.

Eristalis tenax, habits noticed; Ent. Am. vi, p. 126: habits in N. America; HAMILTON (346): in New Zealand; HUDSON, Tr. N. Z. Inst. xxii, p. 187, and SMITH, Ent. M. M. (2) i, p. 240.

Pipizella biguttata, Curt., and *flavitaris*, Mg., are synonymous; VERRALL, Ent. xxiii, p. 153.

Volucella bombylans, its two varr.; BLATHWAYT, Ent. M. M. (2) i, p. 109.

CESTRIDÆ.

Hypoderma bovis attacking man: CALANDRUCCIO, Atti Acc. Gioen. (4) ii, p. 135: larval habits; CURTICE, Ins. Life, ii, p. 207. *H. lineata*, notes on; BRAUER, Verh. z.-b. Wien, xl, pp. 509-515.

TACHINIDÆ, MUSCIDÆ, and SARCOPHAGIDÆ.

Embryology of *Muscidæ*; GRABER (321).

↓ *Anisia*, n. g., p. 186, for the following new species, viz.: *inflexa*, p. 188, *rubripes*, *cineraria*, p. 189, *pallidipalpis*, *fulvipennis*, pl. iv, fig. 15, *ruficoxa*, p. 190, *pulicaria*, *neglecta*, p. 191, *stolida*, *triflata*, *ægrotæ*, p. 192, *intrusa*, *signata*, *nigella*, p. 193, *candicans*, *congerens*, p. 194, *morionella*, *pullata*, *inepta*, p. 195, *accedens*, *peregrina*, p. 196, *futua*, *nigrithorax*, *obscurifrons*, p. 197, *aberrans*, *macroptera*, p. 198, *mucorea*, *conspersa*, p. 199, *niveo-marginata*, *umbrina*, *opaca*, p. 200, *gagatina*, *nigrocincta*, *remissa*, p. 201, *approximata*, *palposa*, p. 202, *ciliata*, *ophthalmica*, *similis*, p. 203, *misella*, *infima*, p. 204, all from Mexico; WULP, Biol. Centr. Am. Dipt. ii.

Baumhaueria discrepans, Mexico; WULP, p. 115, Biol. Centr. Am. Dipt. ii, n. sp.

Brachycoma laticeps, *afra*, p. 92, *foveata*, pl. iii, fig. 12, *robusta*, p. 93, *ruficauda*, *trifida*, p. 94, *pygmaea*, *biseriata*, *pallidula*, p. 95, *sublucens*, *subtilipalpis*, p. 96, *fimbriata*, *irregularis*, p. 97, *nigripalpis*, *barbatula*, p. 98, *incompta*, *longicornis*, p. 99, *striatella*, *cineracea*, p. 100, *spuria*, p. 101, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Calliphora erythrocephala, anatomy and development; LOWNE (492).

↓ *Celatoria*, n. g., near *Baumhaueria*, for *C. crawii*, n. sp., N. America, on *Diabrotica soror*; COQUILLETT, p. 235, Ins. Life, ii.

↓ *Cenosoma*, n. g., p. 166, for *C. signifera*, n. sp., Mexico, p. 167, pl. iv, fig. 13; WULP, Biol. Centr. Am. Dipt. ii.

Clista muscæformis, Mexico, WULP, p. 207, pl. iv, fig. 18, Biol. Centr. Am. Dipt. ii, n. sp.

Cephalia onusta, pl. iii, fig. 4, *obesula*, fig. 3, p. 46, *ochriventris*, p. 47, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

✓ *Crossocosmia*, n. g., for *Ugimyia sericarice*, Rond.; MIK, Wien. ent. Z. ix, p. 313.

Degeeria nigrocostalis, pl. iv, fig. 10, *nitidiuscula*, p. 151, *basalis*, *hyalinipennis*, p. 152, *nigricans*, *magnicornis*, *compressa*, pl. iv, fig. 9, p. 153, Mexico, *monochroma*, *leucocyclus*, p. 154, *nervosa*, *albomarginata*, *longipes*, p. 155, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

✓ *Didyma*, n. g., near *Degeeria*, p. 156, for the following n. spp. from Mexico, viz., *mæsta*, *nigricolor*, *ambulatoria*, p. 158, *otiosa*, *basilaris*, p. 159, *modesta*, *exigua*, p. 160, *timida*, *vagabunda*, *prompta*, p. 161, *pullula*, *albomicans*, p. 162, *inconspicua*, *commixta*, p. 163, *fuliginipennis*, *validinervis*, p. 164, *pavida*, *volucris*, p. 165, WULP, Biol. Centr. Am. Dipt. ii.

✓ *Distichona*, n. g., for *D. varia*, n. sp., Mexico, pl. iii, fig. 2; WULP, p. 44, Biol. Centr. Am. Dipt. ii.

Echinomyia magna, p. 457, *bellardii*, p. 458, *rondanii*, p. 459, *autumnalis*, p. 460, Italy, GIGLIO-TOS, Atti Acc. Tor. xxv, and Boll. Mus. Tor. No. 78 : n. spp.

Exorista (sub *Masipoda*) *geminata*, Br. & Berg., = (*latimana*, Wulp); WULP, Tijdschr. Ent. xxxiii, p. cxxix.

E. obscurata, p. 62, *unicolor*, *ochracea*, p. 63, *cæruleiventris*, *ordinaria*, *brevis*, p. 64, Mexico, *elongata*, Costa Rica, *hispida*, p. 65, *rubricornis*, *latevittata*, p. 66, *tricolor*, pl. iii, fig. 9, *latimana*, fig. 10, p. 67, *consobrina*, *sororcula*, p. 68, *flavirostris*, fig. 7, *interstincta*, p. 69, *trivittata*, *nigricauda*, *angustata*, p. 70, *exilis*, *ignobilis*, p. 71, *humilis*, *maura*, p. 72, *glabricula*, *tenuipalpis*, p. 73, *flavicans*, *griseomicans*, p. 74, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Fabricia nigripalpis, N. Italy, GIGLIO-TOS, Atti Acc. Tor. xxv, p. 460, and Boll. Mus. Tor. No. 78, n. sp.

Gonia foersteri, note on; SIEBECK, Ent. Nachr. xvi, p. 206.

Hamatobia, structure of mouth, &c.; SMITH, Psyche, v, pp. 343-347.

Hypostena leucophæa, p. 141, *blandita*, pl. iv, fig. 4, *concinna*, p. 142, *elegans*, *obumbrata*, p. 143, *pilosa*, fig. 7, *umbripennis*, p. 144, *melaleuca*, fig. 6, *cylindriventris*, p. 145, *quadristriata*, fig. 5, *tubinata*, *strigosa*, p. 146, Mexico, *flavocalyptrata*, fig. 8, *deplanata*, p. 147, Costa Rica, *immunda*, *minima*, Mexico, *albocingulata*, Costa Rica, p. 148, *subtilis*, *nubilosa*, p. 149, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Labidigaster furcata, Mexico, WULP, p. 131, Biol. Centr. Am. Dipt. ii, n. sp.

✓ *Lasiona*, n. g., near *Exorista*, p. 127, for *L. multisetosa*, n. sp., Costa Rica, p. 128, pl. iii, fig. 20; WULP, Biol. Centr. Am. Dipt. ii.

Leucostoma gravipes, Mexico, WULP, p. 207, Biol. Centr. Am. Dipt. ii, n. sp.

Lucilia sp., larva in orbit of *Bufo vulgaris* described; MEINERT, Ent. Med. ii, pp. 89-96, woodcuts.

Macquartia setiventris, p. 129, pl. iii, fig. 21, *acuminata*, *venusta*, *versicolor*, p. 130, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Masicera luctuosa, *strigata*, p. 105, *sodalis*, *abdominalis*, *tantilla*, p. 106, *inquinata*, *impedita*, p. 107, *pumila*, *picta*, pl. iii, fig. 13, p. 108, *bistrigata*,

normula, p. 109, *fraudulenta*, *piliseta*, *subpilosa*, p. 110, *trichoneura*, p. 111, *flavescens*, *bilineata*, *curta*, p. 112, *dejecta*, *sordida*, p. 113, *calcarata*, p. 114, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Meigenia albidula, pl. iii, fig. 6, *flaviventris*, p. 59, *gratiosa*, p. 60, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Metopia perpendicularis, Mexico, WULP, p. 115, pl. iii, fig. 18, Biol. Centr. Am. Dipt. ii, n. sp.

Miltogramma trilineata, *fulvicornis*, *erythrura*, p. 89, *sarcophagina*, p. 90, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Musca vomitoria in New Zealand ; HUDSON, Tr. N. Z. Inst. xxii, p. 188. *M. alliorum*, habits, &c. ; RASPAIL, Bull. Soc. Z. Fr. xv, p. 147 (n. sp.?).

Myobia : *Dexia diadema*, Wied., figured, pl. iv, fig. 2, described and referred to this genus ; WULP, p. 137, Biol. Centr. Am. Dipt. ii.

M. flavicornis, pl. iv, fig. 1, *succincta*, p. 133, *grata*, *scurra*, p. 134, *lepida*, *argenteiceps*, p. 135, *opima*, *angulata*, p. 136, *longipalpis*, p. 138, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

† *Myothyria*, n. g., for *M. trichosoma*, *majorina*, *degeeroides*, n. spp., Centr. America, WULP, p. 208, Biol. Centr. Am. Dipt. ii.

† *Mystacella*, n. g., near *Nemoræa*, p. 51, for *M. rubriventris*, p. 52, *lugubris*, *violacea*, p. 53, *lineata*, p. 54, *solita*, *adjuncta*, p. 55, *tessellata*, *postera*, p. 56, *fuscicostalis*, pl. iii, fig. 5, *flavifrons*, fig. 27, *subcyanea*, *setulosa*, p. 58, n. spp., Mexico ; WULP, Biol. Centr. Am. Dipt. ii.

Nemoræa variegata, *obscurella*, p. 48, *förreri*, p. 49, pl. ii, fig. 21, *smithi*, *intermedia*, p. 50, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

† *Neoptera*, n. g., p. 165, for *N. rufa*, n. sp., Mexico, p. 166, pl. iv, fig. 11 ; WULP, Biol. Centr. Am. Dipt. ii.

† *Philornis*, n. g., for *P. molesta*, n. sp. (larva living on young birds in Brazil) ; MEINERT, Vid. Medd. 1889, pp. 304–317, pl. vi.

Phorocera tenebricosa, Mexico, *nigrita*, pl. iii, fig. 11, Costa Rica, p. 77, *carbonaria*, *parvula*, p. 78, *atriceps*, *rufilabris*, p. 79, *xanthura*, *fulviceps*, p. 80, *nigrifrons*, *cinerea*, p. 81, *cylindrata*, *immaculata*, p. 82, *flavicauda*, *muscaria*, p. 83, *sobrina*, *setigera*, *macra*, p. 84, *appendiculata*, *scutellaris*, p. 85, *linearis*, p. 86, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Plagia setifrons, p. 101, *americana*, pl. iii, fig. 19, *rigidirostris*, p. 102, *incognita*, p. 103, Mexico, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

† *Polygaster*, n. g., for *P. egregia*, n. sp., Mexico, pl. iv, fig. 3, WULP, p. 139, Biol. Centr. Am. Dipt. ii.

† *Prospherysa*, n. g., near *Phorocera*, p. 116, for the following n. spp. from Mexico, viz. : *æmulans*, p. 117, pl. iii, fig. 14, *ochricauda*, *trifasciata*, p. 118, *ingloria*, *comosa*, p. 119, *contigua*, *crebra*, p. 120, *ruffrons*, *vilis*, *albifacies*, p. 121, *macilenta*, *apicalis*, p. 122, *rectinervis*, *minuta*, fig. 16, p. 123, *serotina*, *parvipalpis*, fig. 15, *balteata*, p. 124, *plagioides*, p. 125 ; WULP, Biol. Centr. Am. Dipt. ii.

Rhinophora levigata, Mexico, WULP, p. 205, pl. iv, fig. 17, Biol. Centr. Am. Dipt. ii, n. sp.

Rhynchista (sub *Macquartia*) *monticola*, Egg., and *prolixa*, Meig., distinguished, the former = (*longipes*, Rond.) ; MÜLLER, Wien. ent. Z. ix, p. 156.

Sarcophaga clathrata, hæmorrhœa, biological note on ; MIK, Wien. ent. Z. ix, p. 153. *Sarcophaga*, sp. reared from bot-fly-like larvæ in the box-turtle ; WHEELER (915).

Siphona futilis, p. 125, *diluta*, p. 126, Mexico, WULF, Biol. Centr. Am. Dipt. ii, n. spp.

†*Sphærina*, n. g., near *Clytia*, for *S. nitidula*, n. sp., Mexico, pl. iv, fig. 16 ; WULF, p. 205, Biol. Centr. Am. Dipt. ii.

†*Telothyria*, n. g., near *Mystacella* and *Brachycoma*, p. 167, for the following n. spp., viz. : *nubecula*, *adscripta*, p. 170, *disgrega*, *relicta*, p. 171, *rufo-striata*, *fimbriocrura*, p. 172, *conneza*, *humeralis*, *hamata*, p. 173, *pollens*, *forticula*, p. 174, *trifurca*, *rasilis*, p. 175, *vaciva*, *dissepta*, *recondita*, p. 176, *comata*, *curva*, *lugens*, p. 177, *costalis*, *rava*, p. 178, *striolata*, *fasciata*, p. 179, *ochrifrons*, *murina*, *assimulata*, p. 180, *remota*, *sublineata*, p. 181, *ovata*, *cupreiventris*, pl. iv, fig. 14, *placida*, p. 182, *illucens*, *argenti-frons*, p. 183, *occulta*, *carinata*, *vicina*, p. 184, *refuga*, *pacata*, p. 185, all from Mexico, WULF, Biol. Centr. Am. Dipt. ii.

Trixa obsoleta, p. 87, *differens*, p. 88, Mexico, WULF, Biol. Centr. Am. Dipt. ii, n. sp.

Ugimya : habits and structure of larva discussed ; MEINERT (522, 523), and Ent. Med. ii, p. 162 [cf. also *Crossocosmia*].

The following are the new genera and species contained in BRAUER & BERGENSTAMM's work, arranged in the order thereof :—

†*Dexodes*, n. g., *Masiceratidæ*, for *spectabilis*, Meig. ; BRAUER & BERGENSTAMM, p. 87, Denk. Ak. Wien, lvi.

†*Chrysotachina*, n. g., *Masiceratidæ*, for *T. rheinwarti*, Wied. ; BRAUER & BERGENSTAMM, p. 161, Denk. Ak. Wien, lvi.

†*Megalochæta*, n. g., *Masiceratidæ*, p. 87, for *M. eggeri*, n. sp., Europe, p. 164 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

†*Paruexorista*, n. g., *Masiceratidæ*, for *chelonæ*, Rdi. ; BRAUER & BERGENSTAMM, p. 87, Denk. Ak. Wien, lvi.

†*Hemimasicera*, n. g., *Masiceratidæ*, for *ferruginea*, Rdi. ; BRAUER & BERGENSTAMM, p. 87, Denk. Ak. Wien, lvi.

†*Pexopsis*, n. g., *Masiceratidæ*, for *tibialis*, Mg. ; BRAUER & BERGENSTAMM, p. 88, Denk. Ak. Wien, lvi.

†*Pelmatomyia*, n. g., *Masiceratidæ*, for *Exorista phalænaria*, Rdi. ; BRAUER & BERGENSTAMM, p. 88, Denk. Ak. Wien, lvi.

†*Bavaria*, n. g., *Masiceratidæ*, p. 88, for *B. mirabilis*, n. sp., Bavaria, p. 164 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

†*Lophyromyia*, n. g., *Masiceratidæ*, p. 89, for *L. clausa*, n. sp., Europe, p. 164, BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

†*Thelyconychia*, n. g., *Masiceratidæ*, p. 89 ; type, *solivaga*, Rdi. ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

†*Ptychomyia*, n. g., *Phoroceratidæ*, for *selecta*, Mg. ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi, p. 89.

†*Pentamyia*, n. g., *Phoroceratidæ*, p. 90, for *P. parva*, n. sp., Europe, p. 164, BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Prosopodes*, n. g., *Phoroceratidae*, for *fugax*, Rdi. ; BRAUER & BERGENSTAMM, p. 90, Denk. Ak. Wien, lvi.

↓ *Staurochata*, n. g., *Phoroceratidae*, for *gracilis*, Egg. ; BRAUER & BERGENSTAMM, p. 90, Denk. Ak. Wien, lvi.

↓ *Paraphorocera*, n. g., *Phoroceratidae*, p. 90, for *P. tincla*, n. sp., Europe, p. 165, BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Paraerynnia*, n. g., *Phoroceratidae*, for *vibrissata*, Rdi. ; BRAUER & BERGENSTAMM, p. 91, Denk. Ak. Wien, lvi.

✓ *Amphichata*, n. g., *Phoroceratidae*, for *bicincta*, Mg. ; BRAUER & BERGENSTAMM, p. 91, Denk. Ak. Wien, lvi.

↓ *Tritochaeta*, n. g., *Phoroceratidae*, p. 92, for *T. prosopoides*, n. sp., Europe, p. 165 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Pseudoperichata*, n. g., *Phoroceratidae*, p. 92, for *P. major*, n. sp. (not described) ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Ceratochaeta*, n. g., *Phoroceratidae*, p. 92, for *C. prima*, n. sp., Austria, p. 165 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Pseudophorocera*, n. g., *Phoroceratidae*, p. 92, for *P. setigera*, n. sp., Europe, p. 165 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Hypochaeta*, n. g., *Phoroceratidae*, for *longicornis*, Schin. ; BRAUER & BERGENSTAMM, p. 93, Denk. Ak. Wien, lvi.

↓ *Myiopharus*, n. g., *Phoroceratidae*, for *M. metopia*, n. sp., Mexico ; BRAUER & BERGENSTAMM, p. 161, Denk. Ak. Wien, lvi.

↓ *Diplostichus*, n. g., *Phoroceratidae*, p. 93, for *D. tenthredinum*, n. sp., Europe, p. 165 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Leptochaeta*, n. g., *Phoroceratidae*, p. 95, for *L. ptilopareia*, n. sp., Europe, p. 165 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Podomyia*, n. g., *Blepharipoda*, for *Eurygaster setosa*, Dol. ; BRAUER & BERGENSTAMM, p. 96, Denk. Ak. Wien, lvi.

✓ *Blepharipoda*, n. g., for *scutellata*, R. D. ; BRAUER & BERGENSTAMM, p. 96, Denk. Ak. Wien, lvi.

✓ *Masipoda*, n. g., *Blepharipoda*, for *M. geminata*, n. sp., Mexico ; BRAUER & BERGENSTAMM, p. 162, Denk. Ak. Wien, lvi.

✓ *Argyrophylax*, n. g., *Blepharipoda*, for *T. albincisa*, Wd. ; BRAUER & BERGENSTAMM, p. 163, Denk. Ak. Wien, lvi.

↓ *Trixomorpha*, n. g., *Blepharipoda*, for *T. indica* (Wied.), n. sp. ; BRAUER & BERGENSTAMM, p. 163, Denk. Ak. Wien, lvi.

↓ *Crypsina*, n. g., *Blepharipoda*, for *C. prima*, n. sp., Australia, not described ; BRAUER & BERGENSTAMM, p. 97, Denk. Ak. Wien, lvi.

↓ *Sisyropa*, n. g., *Blepharipoda*, for *thermophila*, Wd. ; BRAUER & BERGENSTAMM, p. 163, Denk. Ak. Wien, lvi.

↓ *Willistonina*, n. g., *Willistonidae*, for *esuriens*, F. Wd. ; BRAUER & BERGENSTAMM, p. 97, Denk. Ak. Wien, lvi.

↓ *Goniophana*, n. g., *Willistonidae*, for *Gonia heterocera*, Mcq. : BRAUER & BERGENSTAMM, p. 97, Denk. Ak. Wien, lvi.

↓ *Eutachina*, n. g., *Eutachinidae*, for *larvarum*, Rdi. ; BRAUER & BERGENSTAMM, p. 98, Denk. Ak. Wien, lvi.

- ✓ *Chatotachina*, n. g., *Eutachinidæ*, for *rustica*, Fall. ; BRAUER & BERGENSTAMM, p. 98, Denk. Ak. Wien, lvi.
- ✓ *Lomatucantha*, n. n. for *Lomachantha*, Rdi. ; BRAUER & BERGENSTAMM, p. 98, Denk. Ak. Wien, lvi.
- ✓ *Stomatomyia*, n. g., *Rhinometopiidæ*, for *filipalpis*, Rdi. ; BRAUER & BERGENSTAMM, p. 98, Denk. Ak. Wien, lvi.
- ✓ *Chalomera*, n. g., *Germariidæ*, p. 99, for *C. fumipennis*, n. sp., Austria, p. 165 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.
- ✓ *Atractochæta*, n. g., *Germariidæ*, for *A. græca*, n. sp. (not described) ; BRAUER & BERGENSTAMM, p. 100, Denk. Ak. Wien, lvi.
- ✓ *Dolichocolon*, n. g., *Germariidæ*, p. 100, for *D. paradoxum*, n. sp., Dalmatia, p. 165 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.
- ✓ *Pseudogonia*, n. g., *Goniidæ*, for *cinerascens*, Rdi. ; BRAUER & BERGENSTAMM, p. 100, Denk. Ak. Wien, lvi.
- ✓ *Onychogonia*, n. g., *Goniidæ*, for *interrupta*, Rdi. ; BRAUER & BERGENSTAMM, p. 100, Denk. Ak. Wien, lvi.
- ✓ *Ptilopareia*, n. g., *Plagiidæ*, for *marginata*, Meig. ; BRAUER & BERGENSTAMM, p. 101, Denk. Ak. Wien, lvi.
- ✓ *Gymnopareia*, n. g., *Thryptoceratidæ* (cf. MIK, Wien. ent. Z. ix, p. 155), for *crassicornis*, Mg. ; BRAUER & BERGENSTAMM, p. 103, Denk. Ak. Wien, lvi.
- ✓ *Trichopareia*, n. g., *Thryptoceratidæ* (cf. MIK, Wien. ent. Z. ix, p. 155), for *seria*, Mg. ; BRAUER & BERGENSTAMM, p. 103, Denk. Ak. Wien, lvi.
- ✓ *Admontia*, n. g., *Thryptoceratidæ*, p. 104, for *A. podomyia*, n. sp., S. E. Europe, p. 166 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.
- ✓ *Urophylla*, n. g., *Thryptoceratidæ*, p. 104, for *U. leptotricha*, n. sp., Austria, p. 166, and *hemichæta*, Sicily, p. 104 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.
- ✓ *Discochæta*, n. g., *Thryptoceratidæ*, for *muscaria*, Fll. ; BRAUER & BERGENSTAMM, p. 104, Denk. Ak. Wien, lvi.
- ✓ *Ptychoneura*, n. g., *Thryptoceratidæ*, for *Tachina rufitarsis*, Mg. ; BRAUER & BERGENSTAMM, p. 104, Denk. Ak. Wien, lvi.
- ✓ *Arrhinomyia*, n. g., *Thryptoceratidæ* ; type, *separata*, Mg. ; BRAUER & BERGENSTAMM, p. 105, Denk. Ak. Wien, lvi.
- ✓ *Blepharomyia*, n. g., *Thryptoceratidæ*, for *amplicornis*, Zett. ; BRAUER & BERGENSTAMM, p. 105, Denk. Ak. Wien, lvi.
- ✓ *Staufferia*, n. g., *Thryptoceratidæ*, p. 105, for *S. diaphana*, n. sp., Austria, p. 166, BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.
- ✓ *Anachætopsis*, n. g., *Thryptoceratidæ*, for *ocyppterina*, Zett. ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi, p. 106.
- ✓ *Amedoria*, n. g., forming the group *Amedoriidæ*, for *medorina*, Schin. ; BRAUER & BERGENSTAMM, p. 106, Denk. Ak. Wien, lvi.
- ✓ *Thelymorpha*, n. g., *Baumheriidæ*, for *vertiginosa*, Fall. ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi, p. 107.
- ✓ *Thraxion*, n. g., *Baumheriidæ*, for *aberrans*, Schin. ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Macroprosopa*, n. g., *Lowiidae*, for *atrata*, Fall. ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Epolia*, n. g., *Miltogrammidae*, p. 113, for *E. velox*, n. sp., E. Africa, p. 166, BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Hesperomyia*, n. g., *Miltogrammidae*, p. 114, for *H. erythroceræ*, n. sp., Texas, not described ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Eumetopia*, n. g. (cf. MIK, Wien. ent. Z. ix, p. 155), *Miltogrammidae*, for *fastuosa*, Mg. ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi, p. 114.

✓ *Brachymera*, n. g., *Paramacronychiidae*, for *letochæ*, Mik ; BRAUER & BERGENSTAMM, p. 116, Denk. Ak. Wien, lvi.

✓ *Rhaphiocheta*, n. g., *Paramacronychiidae*, for *breviseta*, Zett. ; BRAUER & BERGENSTAMM, p. 116, Denk. Ak. Wien, lvi.

✓ *Paramacronychia*, n. g., *Paramacronychiidae*, for *flavipalpis*, Girsch. ; BRAUER & BERGENSTAMM, p. 116, Denk. Ak. Wien, lvi.

✓ *Pachyophthalmus*, n. g., *Paramacronychiidae*, for *signatus*, Mg. ; BRAUER & BERGENSTAMM, p. 117, Denk. Ak. Wien, lvi.

✓ *Pododexia*, n. g., *Macronychiidae*, p. 117, for *P. arachna*, n. sp., Madagascar, p. 166 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Macrometopa*, n. g., *Macronychiidae*, p. 117, for *M. mexicana*, n. sp., Mexico, p. 166 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Angiorhina*, n. g., *Macronychiidae*, for *F. crudelis*, Wied ; BRAUER & BERGENSTAMM, p. 163, Denk. Ak. Wien, lvi.

✓ *Dolichodexia*, n. g., *Dexiidae*, p. 118, for *D. rufipes*, n. sp., Amasia, p. 167 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Homalostoma*, n. g., *Dexiidae*, for *forte*, Rdi. ; BRAUER & BERGENSTAMM, p. 118, Denk. Ak. Wien, lvi.

✓ *Atropidomyia*, n. g., *Dexiidae*, for *parvula*, Port. ; BRAUER & BERGENSTAMM, p. 118, Denk. Ak. Wien, lvi.

✓ *Clinoneura*, n. g., *Dexiidae*, for *D. rubriventris*, Mcq. ; BRAUER & BERGENSTAMM, p. 119, Denk. Ak. Wien, lvi.

✓ *Sardiocera*, n. g., *Dexiidae*, p. 119, for *S. valida*, n. sp., N. America, p. 167 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Tropidomyia*, n. g., *Dexiidae*, p. 119, for *T. macronychia*, n. sp., Syria, p. 167 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Ptilodexia*, n. g., *Dexiidae*, p. 119, for *P. carolinensis*, n. sp., N. America, p. 167 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Myiomima*, n. g., *Dexiidae*, p. 119, for *M. sarcophagina*, n. sp., Centr. America, p. 167 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

Hystrisiphona pseudohystricia, Mexico, BRAUER & BERGENSTAMM, p. 167, Denk. Ak. Wien, lvi, n. sp.

✓ *Eudexia*, n. g., *Dexiidae*, p. 120, for *E. goliath*, n. sp., Venezuela, p. 167 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Gymnobasis*, n. g., *Dexiidae*, for *microcera*, Rdi. ; BRAUER & BERGENSTAMM, p. 120, Denk. Ak. Wien, lvi.

✓ *Peyritschia*, n. g., *Sarcophagidae*, for *nigricornis*, Egg. ; BRAUER & BERGENSTAMM, p. 121, Denk. Ak. Wien, lvi.

↓ *Tapinomyia*, n. g., *Sarcophagidæ*, p. 121, for *T. piliseta*, n. sp., Austria, p. 168, BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Rhinomorinia*, n. g., *Sarcophagidæ*, for *sarcophagina*, Schin.; BRAUER & BERGENSTAMM, p. 123, Denk. Ak. Wien, lvi.

↓ *Ptilozeuxia*, n. g., *Sarcophagidæ*, for *brevicornis*, Egg.; BRAUER & BERGENSTAMM, p. 123, Denk. Ak. Wien, lvi.

↓ *Wohlfahrtia*, n. g., *Sarcophagidæ*, for *magnifica*, S., &c.; BRAUER & BERGENSTAMM, p. 123, Denk. Ak. Wien, lvi.

✓ *Angiometopa*, n. g., *Sarcophagidæ*, for *ruralis*, Fll.; BRAUER & BERGENSTAMM, p. 123, Denk. Ak. Wien, lvi.

Enggops macronyx, Europe, BRAUER & BERGENSTAMM, p. 168, Denk. Ak. Wien, lvi, n. sp.

✓ *Heteronychia*, n. g., *Sarcophagidæ*, p. 124, for *H. chaetoneura*, n. sp., Austria, p. 168; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Sarcophilodes*, n. g., *Sarcophagidæ*, for *S. pusilla*, Wied.; BRAUER & BERGENSTAMM, p. 164, Denk. Ak. Wien, lvi.

↓ *Stomatodexia*, n. g., *Paradexiidæ*, for *cothurnata*, Wd.; BRAUER & BERGENSTAMM, p. 125, Denk. Ak. Wien, lvi.

✓ *Chalogyne*, n. g., *Paradexiidæ*, for *vexans*, Wd.; BRAUER & BERGENSTAMM, p. 125, Denk. Ak. Wien, lvi.

↓ *Pseudoformosia*, n. g., *Paradexiidæ*; type, *Formosia obscuripennis*, Big., litt.; BRAUER & BERGENSTAMM, p. 126, Denk. Ak. Wien, lvi.

✓ *Mochlosoma*, n. g., *Paradexiidæ*, p. 126, for *M. validum* (Say), n. sp., N. America and Mexico, p. 168; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Rhynchodinera*, n. g., *Paradexiidæ*, p. 126, for *R. cinerascens*, n. sp., Sicily, p. 168; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Paraprosena*, n. g., *Paradexiidæ*, p. 127, for *P. wallii*, n. sp., Spain, p. 169; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Dexides*, n. g., *Pseudodexiidæ*, p. 128, for *D. eggeri*, n. sp., Europe, p. 169; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Micronychia*, n. g., *Polideidæ*, for *punctum* coll., Winth.; BRAUER & BERGENSTAMM, p. 131, Denk. Ak. Wien, lvi.

↓ *Bombyliomyia*, n. g., *Hystriciidæ*, p. 131, for *flavipalpis*, Mcq.; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

↓ *Tropidopsis*, n. g., *Hystriciidæ*, for *pyrrhaspis*, Wd.; BRAUER & BERGENSTAMM, p. 132, Denk. Ak. Wien, lvi.

✓ *Hexamera*, n. g., *Hystriciidæ*, p. 132, for *H. orientalis*, n. sp., New Zealand, p. 169; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Jurinella*, n. g., *Hystriciidæ*, for *cæruleonigra*, Mcq.; BRAUER & BERGENSTAMM, p. 132, Denk. Ak. Wien, lvi.

↓ *Pseudohystricia*, n. g., *Hystriciidæ*, for *ambigua*, Mcq.; BRAUER & BERGENSTAMM, p. 132, Denk. Ak. Wien, lvi.

✓ *Homæonychia*, n. g., *Micropalpidæ*; type, *lithosiophaga*, Rdi.; BRAUER & BERGENSTAMM, p. 133, Denk. Ak. Wien, lvi.

✓ *Plagiopsis*, n. g., *Pyrrhosiidæ*, for *soror*, Egg.; BRAUER & BERGENSTAMM, p. 134, Denk. Ak. Wien, lvi.

✓ *Arthrochæta*, n. g., *Pyrrhosiidæ*, p. 134, for *A. demoticoides*, n. sp., Venezuela, p. 169 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Rhinotachina*, n. g., *Pyrrhosiidæ*, for *sybarita*, Mg. ; BRAUER & BERGENSTAMM, p. 135, Denk. Ak. Wien, lvi.

✓ *Hystrichoneura*, n. g., *Pyrrhosiidæ*, for *frontata*, Schin. ; BRAUER & BERGENSTAMM, p. 135, Denk. Ak. Wien, lvi.

✓ *Pseudolowia*, n. g., *Pyrrhosiidæ*, for *sycophanta*, S. ; BRAUER & BERGENSTAMM, p. 136, Denk. Ak. Wien, lvi.

Clista ignota, Europe, BRAUER & BERGENSTAMM, p. 169, Denk. Ak. Wien, lvi, n. sp.

✓ *Pseudomintho*, n. g., *Pseudominthoidæ*, p. 136, for *P. brevipennis*, n. sp., Amasia, p. 169 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Minthodes*, n. g., *Pseudominthoidæ*, p. 136, for *M. pictipennis*, n. sp., Brussa, p. 170 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Actinochæta*, n. g., *Minthoidæ*, p. 137, for *A. columbiæ*, n. sp., Venezuela, p. 170 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Myiomintho*, n. g., *Myiominthoidæ*, for *M. elata*, n. sp., Venezuela, not described ; BRAUER & BERGENSTAMM, p. 138, Denk. Ak. Wien, lvi.

✓ *Pseudoredtenbacheria*, n. g., *Myiominthoidæ*, for *brasiliensis*, Schin. ; BRAUER & BERGENSTAMM, p. 138, Denk. Ak. Wien, lvi.

✓ *Atylostoma*, n. g., *Peteinidæ*, for *tricolor*, Mik. ; BRAUER & BERGENSTAMM, p. 138, Denk. Ak. Wien, lvi.

✓ *Paralophosia*, n. g., *Ocypteridæ*, for *T. imbuta*, Wied. ; BRAUER & BERGENSTAMM, p. 164, Denk. Ak. Wien, lvi.

✓ *Beskia*, n. g., *Ocypteridæ*, p. 139, for *B. cornuta*, n. sp., Brazil, p. 170 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Argyromima*, n. g., *Ocypteridæ*, p. 140, for *A. mirabilis*, n. sp., S. America, p. 170 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Clara*, n. g., *Schineriidæ*, p. 141, for *C. dimidiata*, n. sp., E. India ?, p. 171 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Paraphania*, n. g., *Schineriidæ*, for *Phania diabolus*, S. ; BRAUER & BERGENSTAMM, p. 141, Denk. Ak. Wien, lvi.

✓ *Gymnophania*, n. g., *Phaniidæ*, p. 143, for *G. nigripennis*, n. sp., Tyrol, p. 170 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Cercomyia*, n. g., *Phaniidæ*, for *curvicauda*, Fall. ; BRAUER & BERGENSTAMM, p. 143, Denk. Ak. Wien, lvi.

✓ *Labidogyne*, n. g., *Phaniidæ* ; type, *forcipata*, Mg., with *L. grandis*, n. sp., Austria ; BRAUER & BERGENSTAMM, p. 144, Denk. Ak. Wien, lvi.

✓ *Phaniomyia*, n. subg. of *Labidogyne*, for *biguttata*, Mg. ; BRAUER & BERGENSTAMM, p. 144, Denk. Ak. Wien, lvi.

✓ *Anurogyna*, n. g., *Anurogynidæ*, for *A. dispar*, n. sp., Austria ; BRAUER & BERGENSTAMM, p. 145, Denk. Ak. Wien, lvi.

✓ *Æstrophasia*, n. g., *Æstrophasiidæ*, p. 145, for *Æ. clausa*, Colorado, *aperta*, S. America, n. spp., p. 146 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Phasiopteryx*, n. g., *Æstrophasiidæ*, for *P. bilimekii*, n. sp., Mexico ; BRAUER & BERGENSTAMM, p. 147, Denk. Ak. Wien, lvi.

✓ *Bibionima*, n. g., *Phasiidæ*, for *B. handlirschi*, n. sp., Brazil ; BRAUER & BERGENSTAMM, p. 148, Denk. Ak. Wien, lvi.

✓ *Androphana*, n. g., *Phasiidæ*, p. 149, for *A. grandis* (Schin.), n. sp., Austria, p. 171 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Paramenia*, n. g., *Ameniidæ*, p. 151, for *P. semiauriceps*, n. sp., New Zealand, p. 171 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Chrysopasta*, n. g., *Roderiidæ*, p. 152, for *C. versicolor*, n. sp., New Holland, p. 171 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Adiopsis*, n. g., *Rhynchomyidæ*, p. 153, for *I. prasina* (Lw.), n. sp., Egypt, p. 171 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

✓ *Idiella*, n. g. (*Rhiniidæ*), for *Idia mandarina*, Wd. ; BRAUER & BERGENSTAMM, p. 154, Denk. Ak. Wien, lvi.

✓ *Reinwardtia*, n. g., *Muscidæ*, p. 158, for *R. tachinina*, n. sp., Venezuela, p. 171 ; BRAUER & BERGENSTAMM, Denk. Ak. Wien, lvi.

ANTHOMYIIDÆ.

Note on characters of subfamilies ; VERRALL, Ent. xxiii, p. 153.

Allæostylus and subgenera defined ; SCHNABL, p. 496, Hor. Ent. Ross. xxiv.

Anthomyia dignota, Scandinavia, BIDENKAP, Ent. Tidskr. xi, p. 199, n. sp.

Aricia : its characters and subgenera ; SCHNABL, pp. 493-495, Hor. Ent. Ross. xxiv.

Curicea, notes on ; SCHNABL, pp. 263, &c., Hor. Ent. Ross. xxiv.

Hera, defined ; SCHNABL, p. 497, Hor. Ent. Ross. xxiv.

Hydrotæa similis, Meade, = (*eximia*, Stein) ; STEIN, Wien. ent. Z. ix, p. 35.

Hylemyia criniventris, Zett., p. 299, *penicillaris*, Rond., p. 300, *cardui*, Meade, p. 301, *brunnescens*, Zett., p. 302, distinguished and described ; STEIN, Ent. Nachr. xvi.

Limnophora, its characters and subgenera ; SCHNABL, pp. 495 & 496, Hor. Ent. Ross. xxiv.

Spilogaster duplicata, hermaphrodite described ; SCHNABL, Wien. ent. Z. ix, pp. 177-181.

Trichopticus and subgenera defined ; SCHNABL, p. 497, Hor. Ent. Ross. xxiv.

ORTALIDÆ.

Pyrgotinen : the composition of the group discussed ; MIK, Wien. ent. Z. ix, p. 249.

Rivellia persica, E. India, BIGOT, Ind. Mus. Notes, i, p. 192, n. sp.

Toxotrypana = (*Mikimyia*, Big.), and *T. curvicauda*, Gerst., = (*M. furcifera*, Big.) : the genus should be placed in *Trypetidæ* ; MIK, Wien. ent. Z. ix, pp. 249-254.

TRYPETIDÆ.

Note on ovipositor of ; RILEY, P. E. Soc. Wash. i, p. 263.

Ceratitis capitata, habits and life-history in Bermuda ; *Ins. Life*, iii, pp. 5-8 & 80, woodcuts.

Toxotrypana, Gerst., referred to this family ; *MIK*, Wien. ent. Z. ix, p. 253.

Trypeta bigeloviae, Colorado, COCKERELL, Ent. M. M. (2) i, p. 324, n. sp.

EPHYDRIDÆ.

Ilythea spilota, supposed migration ; SCUDDER, *Psyche*, v, p. 402.

Ochthera, Berg., changed to *Ochtherus* ; BERGROTH, *Psyche*, v, p. cxix.

Pterennis nivalis, Rond., noticed ; GERCKE, J.B. Hamb. Austr. vi, p. 154.

Teichomyza fusca, notes on in Stuttgart ; HOFMANN, J.H. Ver. Württ. xlv, p. 239.

OSCINIDÆ.

Oscinis pusilla, natural history, ravages, &c. ; WILHELM (918).

AGROMYZIDÆ, PHYTOMYZIDÆ, PHORIDÆ.

Agromyza nigripes, habits and ravages ; DECAUX, p. ccvi, Bull. Soc. Ent. Fr. 1890.

Conicera atra, larva attacking corpse ; WEBSTER, *Ins. Life*, ii, pp. 356-358.

Phora cleghorni, E. India, BIGOT, p. 191, Ind. Mus. Notes, i, n. sp.

Phytomyza obscurella, habits of larva ; DOGNIN, *Le Nat.* xii, p. 85.

P. ursula, Dorpat, SENTENIS, Wien. ent. Z. ix, p. 103, n. sp.

† *Ænigmatias*, n. g., for *Æ. blattoides*, n. sp., Denmark ; MEINERT, Ent. Med. ii, pp. 212-226, pl. iv. The position of this insect appears very problematical : it is myrmecophilous.

PUHIPARA.

Braula cæca, noticed, p. 216, figured, pl. iv ; MEINERT, Ent. Med. ii : it possesses eyes, habits ; BOISE, Bull. Soc. Ent. Fr. 1890, p. cc.

Oruithomyia turdi, Latr., and allies, distinctive characters and synonymy ; RÖDER, Ent. Nachr. xvi, p. 311.

(APHANIPTERA.)

Habits of an uncertain species in Florida ; JOHNSON, P. E. Soc. Wash. i, pp. 203-205.

Ceratophyllus talpæ and other species, habits ; DALE, Ent. M. M. (2) i, p. 161.

Pulex tuberculiceps on *Ursus arctos* in Valtellina ; BEZZI, Bull. Ent. Ital. xxii, p. 30, n. sp.

(E.) *RHYNCHOTA*.

HEMIPTERA-HETEROPTERA.

[Cf. ATKINSON (19, 20, 21), BERGROTH (45, 46, 47), DISTANT (170, 172, 175, 317), GODING (316), HORVATH (381), JAKOWLEFF (399, 400, 403), LÉON (481, 482), LOENS (489), MONTANDON (550), PACKARD (588), PÉDESCHENCO (598), PUTON (624), REUTER (671, 672, 673, 674, 675, 676, 677, 678), REY (679), SAUNDERS (724), SCUDDER (754), SHARP (780).]

BERGROTH dissents from some of the changes of names of species effected by Reuter in the Rev. Syn. Het. Pal., and gives a list of the names that should be rejected ; Bull. Soc. Ent. Fr. 1890, pp. lxx & lxxi.

Catalogue of British *Hemiptera* ; SAUNDERS & EDWARDS (724).

Fossil *Heteroptera* ; SCUDDER (754, 759).

✓*Hemidiptera haeckelii*, n. g. & sp., ? Ceylon, ? maritime, LÉON, Jen. Z. Nat. xviii, pp. 13-16, pl. i. (Supposed to be intermediate between *Diptera* and *Hemiptera*.)

The Recorder has failed to trace a genus of the name following ; it is not stated to what order the insect described belongs, so that even the reference to *Rhynchota* is not certain :

✓*Empoasca birdii*, Illinois, GODING, p. 123, Ent. News, i, n. sp.

PENTATOMIDÆ.

Structure of the ♂ terminal segment and nomenclature of the parts ; SHARP (780).

Agræus griseus, figured, pl. xxxi, fig. 8 ; Biol. Centr. Am. Rhynch. Heter.

Arocera schumanni, Mexico, pl. xxxi, fig. 17, p. 336, *altivola*, fig. 18, *chiriquensis*, pl. xxx, fig. 19, Panama, *jalapensis*, fig. 18, Mexico, p. 337, DISTANT, Biol. Centr. Am. Rhynch. Heter., n. spp.

Aspavia ingens, Centr. Africa, DISTANT, p. 475, P. Z. S. 1890 ; *A. calata*, Niam-Niam, DISTANT, p. lvi, C.R. Ent. Belg. 1890 : n. spp.

Spongopus xanthopterus, *remipes*, *sepulcralis*, variation and synonymy noticed ; DISTANT, p. lviii, C.R. Ent. Belg. 1890. *A. obscurus*, ♂ characters described ; SHARP, Tr. E. Soc. 1890, p. 404.

A. cyclopeltus, *cruralis*, Niam-Niam, DISTANT, p. lviii, C.R. Ent. Belg. 1890, n. spp.

Atelocera malleata, Niam-Niam, DISTANT, p. lv, C.R. Ent. Belg. 1890, n. sp.

Banana stigmosa, Panama, DISTANT, p. 340, pl. xxx, fig. 24, Biol. Centr. Am. Rhynch. Heter., n. sp.

Basicryptus bohndorffi, Niam-Niam, DISTANT, p. lviii, C.R. Ent. Belg. 1890, n. sp.

Boea costaricensis, Costa Rica, DISTANT, p. 338, pl. xxx, fig. 23, Biol. Centr. Am. Rhynch. Heter., n. sp.

Brachyplatys spp. ?, male characters described and figured ; SHARP, Tr. E. Soc. 1890, p. 414, pl. xiv, figs. 26 & 27.

Brachystethus parvus, Panama, DISTANT, p. 342, pl. xxxi, fig. 23, Biol. Centr. Am. Rhynch. Heter., n. sp.

Calidea baro, male characters described ; SHARP, Tr. E. Soc. 1890, p. 414.

Calliphara obscura, ♂ characters described and figured ; SHARP, p. 412, pl. xiv, fig. 25, Tr. E. Soc. 1890.

Cantao ocellata, male characters described ; SHARP, Tr. E. Soc. 1890, p. 411.

Capnoda batesoni, Turkestan, JAKOWLEFF, p. 324, Hor. Ent. Ross. xxiv, n. sp.

Cappæa taprobanensis, male characters described ; SHARP, Tr. E. Soc. 1890, p. 409.

Carbula bohndorffi, Niam-Niam, DISTANT, p. lvi, C.R. Ent. Belg. 1890, n. sp.

Carridophthalmus sexspinosus, Assm., referred to *Allocotus*, Mayr, and redescribed ; BERGROTH, Ent. M. M. (2) i, p. 132.

Catacanthus incarnatus, male characters described and figured ; SHARP, Tr. E. Soc. 1890, pl. xiii, fig. 20, p. 411.

✓*Ceratocranum*, n. n. for *Ceratocephala*, Jak. ; REUTER, p. 248, Rev. d'Ent. ix.

Chlorochroa, Stål, = (*Pitedia*, Reut.) ; BERGROTH, Bull. Soc. Ent. Fr. 1890, p. lxvi.

C. montivaga, Panama, DISTANT, p. 333, pl. xxxi, fig. 13, Biol. Centr. Am. Rhynch. Heter., n. sp.

Chlorocoris rufopictus figured, pl. xxxi, fig. 15 ; noticed, p. 334 ; DISTANT, Biol. Centr. Am. Rhynch. Heter.

C. usitatus, Guatemala, pl. xxx, fig. 20, *hebetatus*, Mexico, pl. xxxi, fig. 16, DISTANT, p. 335, Biol. Centr. Am. Rhynch. Heter., n. spp.

Coptosoma semiflavum, Sze-tschuan, JAKOWLEFF, p. 541, Hor. Ent. Ross. xxiv ; *C. tripolitanum*, N. Africa, BERGROTH, Rev. d'Ent. ix, p. 355 : n. spp.

Cyclogastridea equatoria, Niam-Niam, DISTANT, p. lvii, C.R. Ent. Belg. 1890, n. sp.

Dalpada oculata, male characters described ; SHARP, Tr. E. Soc. 1890, p. 408.

Dichelops bicolor, Panama, DISTANT, p. 332, pl. xxxi, fig. 12, Biol. Centr. Am. Rhynch. Heter., n. sp.

Diploxys niamensis, Niam-Niam, DISTANT, p. lvi, C.R. Ent. Belg. 1890, n. sp.

Edessa tauriformis, pl. xxx, fig. 25, *pictiventris*, pl. xxxii, fig. 3, *fusci-*

spina, fig. 10, *junix*, var. fig. 13, figured; Biol. Centr. Am. Rhynch. Heter. *E. rufomarginata*, *cornuta*, male characters described and figured; SHARP, Tr. E. Soc. 1890, p. 410, pl. xii, figs. 6 & 7, pl. xiii, figs. 8, 9, & 15.

E. intorta, pl. xxxii, fig. 2, *bulbacea*, fig. 4, Panama, p. 343, *gentilitia*, fig. 5, *tribuaria*, fig. 6, Mexico, *bugabensis*, fig. 7, p. 344, *projecta*, fig. 8, Panama, *pennata*, Guatemala, fig. 9, p. 345, *jansoni*, Nicaragua, fig. 11, *præfracta*, Guatemala, fig. 12, p. 346, *metata*, Panama, fig. 14, p. 347, *celsa*, fig. 15, *expolita*, fig. 16, *polymita*, fig. 17, p. 348, Panama, *indigena*, Mexico, fig. 18, *caldaria*, fig. 19, Panama, p. 349, *densata*, pl. xxxi, fig. 24, *abdita*, pl. xxxii, fig. 20, p. 350, *picata*, pl. xxxi, fig. 25, p. 351, Mexico, DISTANT, Biol. Centr. Am. Rhynch. Heter., n. spp.

Elasmostethus rufescens, Sze-tschuan, JAKOWLEFF, p. 548, Hor. Ent. Ross. xxiv, n. sp.

Eurostus grossipes, male characters described; SHARP, Tr. E. Soc. 1890, p. 404.

Eusarcoris potanini, China, JAKOWLEFF, p. 542, Hor. Ent. Ross. xxiv, n. sp.

Euschistus zopilotensis, pl. xxxi, fig. 9, p. 330, *capitatus*, fig. 10, *teapensis*, fig. 11, p. 331, Mexico, DISTANT, Biol. Centr. Am. Rhynch. Heter., n. spp.

Eusthenes eurytus, p. 402, *pratti*, p. 403, pl. xii, fig. 4, ♂ characters described; SHARP, Tr. E. Soc. 1890.

E. pratti, China, DISTANT, Ent. xxiii, p. 160, n. sp.

Gellia rugulosa, Niam-Niam, DISTANT, p. lx, C.R. Ent. Belg. 1890, n. sp.

Glypsus erubescens, Niam-Niam, DISTANT, p. lv, C.R. Ent. Belg. 1890, n. sp.

Gonopsis maura, Niam-Niam, DISTANT, p. lx, C.R. Ent. Belg. 1890, n. sp.

Lobostoma: this name to be replaced by *Discostoma* (cf. Palæontology, p. 83).

Mecosoma florida, Niam-Niam, DISTANT, p. liv, C.R. Ent. Belg. 1890, n. sp.

Megarhynchus limatus, ♂ characters described and figured; SHARP, Tr. E. Soc. 1890, p. 406, pl. xiii, fig. 18.

Mimula, n. g., near *Dolycoris*, p. 320, for *M. nigrita*, p. 321, *maureri*, p. 322, n. spp., Ferghana; JAKOWLEFF, Hor. Ent. Ross. xxiv.

Mozena gaumeri, Mexico, DISTANT, p. 352, Biol. Centr. Am. Rhynch. Heter., n. sp.

Mustha: synopsis of the species; REUTER, Rev. d'Ent. ix, p. 262.

M. longispinis, Asia Minor, REUTER, Rev. d'Ent. ix, p. 264, n. sp.

Neoglypsus opulentus, China, DISTANT, Ent. xxiii, p. 159, n. sp.

Nezara, sp., p. 406, pl. xiii, figs. 11 & 12, *viridula*, fig. 16, *marginata*, fig. 17, p. 408, male characters described; SHARP, Tr. E. Soc. 1890.

N. breviceps, Transcaucasus, JAKOWLEFF, p. 323, Hor. Ent. Ross. xxiv; *N. orbiculata*, Centr. Africa, DISTANT, p. 476, P. Z. S. 1890; *N. rubri-*

pennis, Sze-tschuan, JAKOWLEFF, p. 544, Hor. Ent. Ross. xxiv; *N. canadensis*, pl. xxxi, fig. 19, *majuscula*, fig. 20, Mexico, *scutellata*, fig. 21, *panamensis*, pl. xxxii, fig. 1, Panama, DISTANT, p. 339, Biol. Centr. Am. Rhynch. Heter. : n. spp.

Pallantia macula figured, pl. xxx, fig. 22; Biol. Centr. Am. Rhynch. Heter.

Peribalus ovatus, Siberia, JAKOWLEFF, p. 319, Hor. Ent. Ross. xxiv; *P. capitatus*, Centr. Asia, JAKOWLEFF, p. 236, *t. c.* : n. spp.

✓*Periphima*, n. g., near *Polyphima*, p. 312, for *P. batesoni*, n. sp., Turkestan, p. 314, JAKOWLEFF, Hor. Ent. Ross. xxiv.

Pharypia pulchella, male characters described and figured; SHARP, Tr. E. Soc. 1890, p. 410, pl. xiii, fig. 13.

Phimodera collina, Irkutsk, JAKOWLEFF, p. 317, Hor. Ent. Ross. xxiv, n. sp.

Piezodorus martini, Caucasus, PUTON, Rev. d'Ent. ix, p. 227; *P. tinctus*, Panama, DISTANT, p. 341, pl. xxxi, fig. 22, Biol. Centr. Am. Rhynch. Heter. : n. spp.

Piezosternum subulatum, male characters described and figured, pl. xiii, fig. 10, p. 404; SHARP, Tr. E. Soc. 1890.

Platynopus silvaticus, Centr. Africa, DISTANT, p. 475, P. Z. S. 1890, n. sp.

Pæcilochema lata, male characters described and figured, pl. xiv, figs. 21 & 22, *hardwicki*, p. 413, fig. 23; SHARP, Tr. E. Soc. 1890, p. 412.

Polyphima kænigi, Transcaspian region, JAKOWLEFF, p. 315, Hor. Ent. Ross. xxiv, n. sp.

Prionochilus, Dall : *Lelia*, Wlk., to be used in place of this; REUTER, p. 248, Rev. d'Ent. ix.

Procilia bonnyi, Centr. Africa, DISTANT, p. 474, P. Z. S. 1890, n. sp.

Psacasta transcaspica, Askhabad, JAKOWLEFF, p. 311, Hor. Ent. Ross. xxiv, n. sp.

Rubiconia peltata, Amdo, JAKOWLEFF, Hor. Ent. Ross. xxiv, p. 543, n. sp.

↓*Sandehana*, n. g. (*Phyllocephalinae*, near *Basicryptus*), for *S. labiosa*, n. sp., Niam-Niam; DISTANT, p. lix, CR. Ent. Belg. 1890.

Schismatops gelei, Congo, DISTANT, p. lx, CR. Ent. Belg. 1890, n. sp.

Stilida indecora, Stål, male characters described and figured; SHARP, Tr. E. Soc. 1890, p. 409, pl. xii, fig. 5.

Taricha nitens, male characters described and figured; SHARP, Tr. E. Soc. 1890, p. 415, pl. xiv, fig. 28.

Tesseratoma nigripes, p. 401, pl. xii, fig. 2, *papillosa*, fig. 3, *malaya*, fig. 1, p. 402, male characters described and figured; SHARP, Tr. E. Soc. 1890.

T. nemorivaga, p. 476, *indicta*, p. 477, Centr. Africa, DISTANT, P. Z. S. 1890, n. spp.

Thyanta maculata figured, pl. xxx, fig. 21, Biol. Centr. Am. Rhynch. Heter.

Trichopepla dubia, Mexico, DISTANT, p. 333, pl. xxxi, fig. 14, Biol. Centr. Am. Rhynch. Heter., n. sp.

- ↓ *Trochiscocoris*, n. n. for *Trochiscus*, Jak.; REUTER, p. 249, Rev. d'Ent. ix.
Tropicoris illuminatus, China, DISTANT, Ent. xxiii, p. 159, n. sp.
Urostylus pallescens, p. 545, *musivus*, p. 547, Ganssu, JAKOWLEFF, Hor.
 Ent. Ross. xxiv, n. spp.
Veterna mimica, Niam-Niam, DISTANT, p. lv, CR. Ent. Belg. 1890, n. sp.
Zangis namensis, Niam-Niam, DISTANT, p. lvii, CR. Ent. Belg. 1890,
 n. sp.

COREIDÆ.

- Agraphopus mongolicus*, Central Asia, JAKOWLEFF, p. 237, Hor. Ent.
 Ross. xxiv, n. sp.
Alydus calcaratus var. *hirsutus*, Kol., = (*stratus*, Motsch.); REUTER,
 p. 249, Rev. d'Ent. ix.
Haploprocta semenovi, Gobi, JAKOWLEFF, p. 550, Hor. Ent. Ross. xxiv,
 n. sp.
Phyllomorpha algerica and *lacerata* distinctive characters; REUTER,
 p. 249, Rev. d'Ent. ix.
Protenor belfragei = (*Tetrarrhinus quebecensis*, Prov.); BERGROTH,
 Ent. Am. vi, p. 217.
Syromastes potanini, China, JAKOWLEFF, p. 551, Hor. Ent. Ross. xxiv,
 n. sp.

LYGÆIDÆ and PYRRHOCORIDÆ.

- / *Anorthus*, n. subg. of *Nysius*; HORVATH, Rev. d'Ent. ix, p. 190.
Arocatus fasciatus, Transbaikal, JAKOWLEFF, p. 328, Hor. Ent. Ross.
 xxiv, n. sp.
Brachyplax palliata, Costa, = (*linearis*, Scott); REUTER, p. 249,
 Rev. d'Ent. ix.
 ↓ *Bycanistellus*, n. n., for *Bycanistes*, Stål, REUTER, p. 249, Rev. d'Ent. ix.
Dieuches armipes, Fab., = (*raguseæ*, Put.); PUTON, p. 234, Rev.
 d'Ent. ix.
Diomphalus annulicernis, Transbaikal, JAKOWLEFF, p. 332, Hor. Ent.
 Ross. xxiv, n. sp.
Emblethis parvus, p. 174, *angustus*, p. 175, Algeria, MONTANDON, Rev.
 d'Ent. ix, n. spp.
 ✓ *Esuridea*, n. g., near *Hyalochilus*, Fieb., p. 260, for *E. maculata*, n. sp.,
 Madeira, p. 261; REUTER, Rev. d'Ent. ix.
Geocoris albipennis and *ater*, distinctive characters; REUTER, p. 249,
 Rev. d'Ent. ix.
G. turkestanicus, Turkestan, JAKOWLEFF, p. 329, Hor. Ent. Ross. xxiv;
G. tuberculifrons, p. 554, *variabilis*, p. 555, Mongolia, JAKOWLEFF, Hor.
 Ent. Ross. xxiv : n. spp.
Gonianotus barbarus, N. Africa, MONTANDON, Rev. d'Ent. ix, p. 178,
 n. sp.
Heterogaster affinis, n. var. *rubricatus*; PUTON, p. 228, Rev. d'Ent. ix.

Hyalocoris longicollis, Transcaspian region, JAKOWLEFF, p. 332, Hor. Ent. Ross. xxiv, n. sp.

Lygæus belogolowi, China, JAKOWLEFF, p. 327, Hor. Ent. Ross. xxiv ; *L. teraphoides*, Sze-tschuan, *id.* p. 552, *t. c.* : n. spp.

Macropterna ornata, Transcaspian region, JAKOWLEFF, p. 331, Hor. Ent. Ross. xxiv, n. sp.

Nysius : catalogue, tabulation, and synonymy of the palæarctic species ; HORVATH, Rev. d'Ent. ix, pp. 185-191.

N. stalianus, Europe and Mediterranean reg., &c., p. 189, *N. (Anorthus) atlantidum*, Azores, p. 190, HORVATH, Rev. d'Ent. ix, n. spp.

Oxycaenus hyalinipennis, Costa, = (*Cymus cineticornis*, Wlk.) ; PUTON, p. 234, Rev. d'Ent. ix.

Paresuris, n. g. (*Lethæaria*), for *P. helmsi*, n. sp., New Zealand ; REUTER, Rev. d'Ent. ix, p. 192.

Piezoscelis punctata, Luc., = (*putoni*, Reut.) ; REUTER, p. 249, Rev. d'Ent. ix.

Pyrhocoris apterus, winged and intermediate forms noticed ; LOENS, Ent. Nachr. xvi, p. 10.

Scolopostethus abdominalis, Sze-tschuan, JAKOWLEFF, p. 557, Hor. Ent. Ross. xxiv, n. sp.

Taphropeltus hamulatus, Th., = (*obscurior*, Rey) ; REUTER, p. 249, Rev. d'Ent. ix.

TINGITIDÆ and ARADIDÆ.

Aradus nemtschinowi, p. 334, *morio*, p. 336, Amurland, JAKOWLEFF, Hor. Ent. Ross. xxiv ; *A. abnormis*, p. 730, *candidatus*, p. 732, Tenasserim, BERGROTH, Ann. Mus. Genov. (2) vii : n. spp.

Artabanus atkinsoni, p. 734, *breviscutum*, p. 735, Tenasserim, BERGROTH, Ann. Mus. Genov. (2) vii, n. spp.

Brachyrhynchus triangulus, p. 736, *feanus*, p. 737, *montanus*, p. 738, Tenasserim, BERGROTH, Ann. Mus. Genov. (2) vii, n. spp.

Monanthia platyoma, Fieb., characters noticed ; REUTER, Rev. d'Ent. ix, p. 250. *M. cardui* n. var. *maderensis* ; REUTER, p. 262, Rev. d'Ent. ix.

M. (Catoplatus) fulvicornis, Askhabad, JAKOWLEFF, p. 334, Hor. Ent. Ross. xxiv, n. sp.

Serenthia lecta and *femoralis*, forms and characters noticed ; REUTER, p. 249, Rev. d'Ent. ix.

✓ *Odonia*, n. g., for *Aradus truncatus*, Wlk. ; BERGROTH, p. 733, Ann. Mus. Genov. (2) vii.

CAPSIDÆ.

Catalogue of the family, with references and localities ; ATKINSON (19).

A paper on N. American *Capsidæ*, with descriptions of new species, in Tr. Maryland Ac. Sci. 1890, pp. 73-88, has not been seen by the Recorder. Cf. Ent. News, i, p. 113.

Agalliastes fulvicornis, Mongolia, JAKOWLEFF, p. 348, Hor. Ent. Ross. xxiv, n. sp.

Anapus longicornis, Jak., = (*Labops arenarius*, Horv.) ; REUTER, p. 254, Rev. d'Ent. ix.

Brachycoleus triangularis, Goeze, *bimaculatus*, Ramb., &c., synonymy noticed ; REUTER, p. 252, Rev. d'Ent. ix.

Brachytropis pilosa, Centr. Asia, JAKOWLEFF, p. 243, Hor. Ent. Ross. xxiv, n. sp.

Calocoris clavicornis, Ganssu, JAKOWLEFF, p. 558, Hor. Ent. Ross. xxiv, n. sp.

Camptobrochis pallidus, Egypt, REUTER, p. 255, Rev. d'Ent. ix, n. sp.

✓ *Campylognathus*, n. g., near *Asciodema*, p. 258, for *C. nigrigenis*, n. sp., Algeria, p. 259 ; REUTER, Rev. d'Ent. ix.

Capsus ater, Irkutsk, p. 344, *quadrimaculatus*, Transcaucasus, p. 345, *nebulosus*, E. Siberia, p. 346, JAKOWLEFF, Hor. Ent. Ross. xxiv, n. spp.

Cytorrhinus parviceps, Egypt, REUTER, p. 258, Rev. d'Ent. ix, n. sp.

Derwocoris flavilinea, Costa, redescribed ; REUTER, Nat. Sicil. x, p. 2.

✓ *Dimorphocoris*, n. g., for a part of *Labops* ; REUTER, Rev. d'Ent. ix, p. 253.

D. gracilis, Ramb., = (*Orthocephalus signatus*, Fieb.) ; REUTER, p. 254, Rev. d'Ent. ix.

Diplacus, Stål, to be replaced by *Myrmecophyes*, Fieb. ; REUTER, p. 252, Rev. d'Ent. ix.

Ethelustia, Reut., position near *Phylus* suggested ; REUTER, p. 254, Rev. d'Ent. ix.

Ialticus luteicollis, Panz., = (*bicolor*, Germ.) ; *H. henschi* and *pusillus*, distinctive characters ; REUTER, p. 252, Rev. d'Ent. ix.

Hyoidea horvathi, Algeria, MONTANDON, Rev. d'Ent. ix, p. 178, n. sp.

Irbisia, Reut., systematic position noticed ; REUTER, Rev. d'Ent. ix, p. 253.

Læmocoris costæ, Egypt, REUTER, p. 257, Rev. d'Ent. ix, n. sp.

✓ *Lamprella*, n. g., for *Labops punctatipennis*, Reut. ; REUTER, Rev. d'Ent. ix, p. 253.

Lopus gothicus n. var. *marginalis* ; REY, Rev. d'Ent. ix, p. 29.

Lygus fuscus, Egypt, REUTER, p. 255, Rev. d'Ent. ix ; *L. monachus*, N. America, UHLER, Fifth Rep. U. S. Ent. Comm. p. 421 : n. spp.

Macrocoleus (Amblytylus) lunula, Fieb., redescribed ; *krueperi*, n. var. described ; REUTER, p. 4, Nat. Sicil. x.

M. ragusæ, Sicily, REUTER, p. 3, Nat. Sicil. x, n. sp.

✓ *Megalocoleus*, n. n. for *Macrocoleus*, Fieb. ; REUTER, p. 254, Rev. d'Ent. ix.

Mimocoris coarctatus, M. & R., = (*Myrmecomimus paderoides*, Costa) ; REUTER, p. 252, Rev. d'Ent. ix.

Nasocoris platytranoïdes, Algeria, MONTANDON, Rev. d'Ent. ix, p. 179, n. sp.

Orthocephalus proserpinæ, M. & R., = (*coracinus*, Fieb.) ; *mutabilis*, Fall., = (*C. stygialis*, M. & R.) ; REUTER, p. 254, Rev. d'Ent. ix.

✓ *Pachytomella*, n. n. for *Pachytoma*, Costa ; REUTER, p. 253, Rev. d'Ent. ix. *P. passerinii*, Costa, = (*minor*, Costa) ; REUTER, p. 254, t. c..

Piezocranum simulans and *Orthocephalus punctatipennis*, distinctive characters ; REUTER, p. 253, Rev. d'Ent. ix.

Pithanus ragusæ, Sicily, REUTER, Nat. Sicil. x, p. 1, n. sp.

Plagiognathus albipennis, Fall., = (*Phytocoris betuleti*, Hahn) ; REUTER, p. 254, Rev. d'Ent. ix.

Plagiorrhamma concolor, Caucasus, REUTER, Rev. d'Ent. ix, p. 246, n. sp.

✓ *Platyporus*, n. g., near *Euryopocoris*, p. 246, for *P. dorsalis*, Transcaucasus, p. 247 ; REUTER, Rev. d'Ent. ix.

Platypsallus, Sahlb., characters and position noticed ; REUTER, r. 253, Rev. d'Ent. ix.

Psallus ancorifer var. *fuscinervis* = (*puberulus*, Mont.), *limbatellus*, Put., systematic characters noticed ; REUTER, p. 254, Rev. d'Ent. ix.

✓ *Saundersiella*, n. n. for *Saundersia*, Reut. ; REUTER, p. 252, Rev. d'Ent. ix.

✓ *Schænocoris*, n. g., for *Labops flavomarginatus*, Costa ; REUTER, Rev. d'Ent. ix, p. 253.

✓ *Sartetellus*, n. g., for *Labops brevipennis*, Reut. ; REUTER, Rev. d'Ent. ix, p. 253.

Systemonotus albofasciatus, Luc., = (*micelii*, Fer.) ; *unifasciatus*, Fieb., = (*venustissimus*, Costa) ; REUTER, p. 252, Rev. d'Ent. ix.

S. putoni, Tunis, REUTER, p. 256, Rev. d'Ent. ix, n. sp.

Strongylocoris obscurus, Ramb., = (*Capsus obesus*, M. & R., and *Stiphrosoma livida*, Fieb.) ; REUTER, p. 253, Rev. d'Ent. ix.

Tuponia brevicornis, Sarepta, REUTER, Rev. d'Ent. ix, p. 248, n. sp.

ANTHOCORIDÆ and SALDIDÆ.

Acanthia amoena, Reut., redescribed, p. 250 ; distinctions of *A. saltatoria* and *pallipes*, *laticollis*, Reut., and *palustris*, D. & S., are varr. of the latter ; *pilosella*, Th., and *arenicola*, Scholz, characters of, p. 251 ; REUTER, Rev. d'Ent. ix.

Ectemnus magnicornis, Tauria, JAKOWLEFF, p. 344, Hor. Ent. Ross. xxiv, n. sp.

Leptopus assouanensis, Costa, = (*niloticus*, Reut.) ; PUTON, p. 234, Rev. d'Ent. ix.

Microphysa abeillei, Hyères, PUTON, p. 229, Rev. d'Ent. ix, n. sp.

Montandoniella dacica, Put., = (*Ectemnus magnicornis*, Jak., *supra*) ; REUTER, p. 252, Rev. d'Ent. ix.

Salda suturalis, Amurland, JAKOWLEFF, p. 342, Hor. Ent. Ross. xxiv ; *S. roborowskii*, Central Asia, JAKOWLEFF, p. 242, t. c. : n. spp.

REDUVIIDÆ, NABIDÆ.

Acanthonabis, n. subg. of *Nabis* ; REUTER, p. 305, Rev. d'Ent. ix.

Allæorrhynchus güssfeldtii, Stein, = *puerilis*, Stål ; REUTER, p. 291, Rev. d'Ent. ix.

Arachnocoris, Scott, noticed as forming a subfamily ; REUTER, p. 292, Rev. d'Ent. ix.

✓*Callistodema*, n. n. for *Callidema*, Jak. ; REUTER, p. 250, Rev. d'Ent. ix.

Centroscelicoris, systematic position of ; REUTER, p. 250, Rev. d'Ent. ix.

C. przewalskii, Centr. Asia, JAKOWLEFF, p. 239, Hor. Ent. Ross. xxiv, n. sp.

Coranus arenaceus, Wlk., characters of ; PUTON, p. 235, Rev. d'Ent. ix.

C. lativentris, Schansi, JAKOWLEFF, Hor. Ent. Ross. xxiv, p. 559, n. sp.

✓*Halonabis*, n. subg. of *Nabis* ; REUTER, p. 304, Rev. d'Ent. ix.

Harpactor analis, p. 340, *flavolimbatus*, p. 341, Transcaucasus, JAKOWLEFF, Hor. Ent. Ross. xxiv ; *H. rubricoxa*, Persia, BERGROTH, Rev. d'Ent. xii, p. 56 : n. spp.

✓*Hoplistoscelis*, n. subg. of *Nabis* ; REUTER, p. 295, Rev. d'Ent. ix.

✓*Lasiomerus*, n. subg. of *Nabis* ; REUTER, p. 305, Rev. d'Ent. ix.

Mecistocoris, Reut., systematic position of ; REUTER, Rev. d'Ent. ix, p. 250.

Nabis propinquus, Reut., = (*vicarius*, Reut.), *roseipennis*, Reut., = (*punctipes*, Reut.) ; REUTER, p. 308, Rev. d'Ent. ix.

N. punctatissimus, Centr. Asia, JAKOWLEFF, p. 240, Hor. Ent. Ross. xxiv ; *N. (Aptus) maracandicus*, p. 302, *curvipennella*, Turkestan, *hottentotta*, Caffraria, p. 303, *N. (Acanthonabis) spinicrus*, Brazil, p. 305, *N. per similis*, Biskra, p. 308, REUTER, Rev. d'Ent. ix : n. spp.

Nagusta simonis, Cairo, PUTON, p. 228, Rev. d'Ent. ix, n. sp.

Oncocephalus jakowleffi, Armenia, BERGROTH, Rev. d'Ent. ix, p. 56, n. sp.

Opsicetus tenuicornis, Transcaspiian region, JAKOWLEFF, p. 338, Hor. Ent. Ross. xxiv, n. sp.

Phorticus parvulus, Marocco, REUTER, p. 290, Rev. d'Ent. ix, n. sp.

Polytozus, Spin., to be used in place of *Acanthothorax*, Costa ; REUTER, p. 250, Rev. d'Ent. ix.

Prostemma krueperi, Stein, macropterous form described ; REUTER, p. 289, Rev. d'Ent. ix. *P. flavum*, characters of ; REUTER, p. 291, Rev. d'Ent. ix.

P. lugubris, Amurland, JAKOWLEFF, p. 338, Hor. Ent. Ross. xxiv, n. sp.

Reduvius yambuya, Centr. Africa, DISTANT, p. 478, P. Z. S. 1890, n. sp.

Santosia luteola, Centr. Africa, DISTANT, p. 478, P. Z. S. 1890, n. sp.

✓*Scelotrachia*, n. subg. of *Prostemma* ; REUTER, p. 291, Rev. d'Ent. ix.

✓*Stenonabis*, n. subg. of *Nabis* ; REUTER, p. 306, Rev. d'Ent. ix.

HYDROMETRIDÆ.

Aëpophilus bonnairii, habits ; KEYS, Ent. M. M. (2) i, p. 247.

Gerris aegyptiaca, Suez, PUTON, Rev. d'Ent. ix, p. 228, n. sp.

Hydrometra jankowskii, E. Siberia, JAKOWLEFF, p. 337, Hor. Ent. Ross. xxiv, n. sp.

HYDROCORISÆ.

Corixa atomaria, n. var. *conglomerata* ; REY, Rev. d'Ent. ix, p. 29.

C. infusata, Portugal, REY, Rev. d'Ent. ix, p. 30 ; *C. algirica*, Oran, PUTON, p. 230, Rev. d'Ent. ix : n. spp.

Notonecta glauca, embryology ; PÉDASCENCO (598).

✓ *Ochthera*, n. n., in place of *Pelogonus*, Reut., = *Ochterus*, auct ; BERGMANN, Bull. Soc. Ent. Fr. 1890, p. lxvi.

Sigara distans, France, REY, Rev. d'Ent. ix, p. 31, n. sp.

HEMIPTERA-HOMOPTERA.

[Cf. ASHMEAD (16), BUCKTON (99), DISTANT (171, 172, 173, 174), DUZEE (203, 204, 205, 206), EDWARDS (724), FALLOU (240), HANSEN (350), KARSCH (409, 410, 411), LETHIERRY (483), MASKELL (511), PROVANCHER (620), PUTON (624), RILEY (588), WOODWORTH (927), also APHIDIDÆ and COCCIDÆ.]

New genera and species are described by UHLER in a paper in the Tr. Maryland Ac. Sci. 1888-1889, not seen by the Recorder. Cf. Ent. News, i, p. 61.

Synonymical list of *Homoptera* described by Say, Harris, and Fitch ; DUZEE, Psyche, v, pp. 387-391.

Structural characters in antennæ, legs, spiracles, &c., described, and classification of the early groups discussed ; HANSEN, Ent. Tidskr. xi, pp. 19-76, pls. i & ii.

Fossil *Homoptera* ; SCUDDER (754, 757, 759).

CICADIDÆ.

✓ *Angamiana*, n. g., near *Polyneura*, p. 234, for *A. ætherea*, n. sp., Naga Hills, p. 235 ; DISTANT, Ann. N. H. (6) v.

Callipsaltria nigra, Cape Good Hope, KARSCH, B. E. Z. xxxv, p. 115, n. sp.

Cicada septendecim, notes on in 1889 ; SCHWARZ, P. E. Soc. Wash. i, p. 230.

C. leechi, *sinensis*, China, DISTANT, Ent. xxiii, p. 90, n. spp.

Karenia cælatata, China, DISTANT, Ent. xxiii, p. 91, n. sp.

✓ *Lacetas*, n. g. (*Tibiceninae*), for *L. annulicornis*, n. sp., Accra ; KARSCH, B. E. Z. xxxv, p. 113.

✓ *Ligymolpa*, n. g. (*Tibiceninae*), for *L. madegassa*, n. sp., Madagascar ; KARSCH, B. E. Z. xxxv, p. 122.

Malagasias, Dist., = (*Epora*, Stål) ; KARSCH, B. E. Z. xxxv, p. 122.

M. distanti, Madagascar, KARSCH, B. E. Z. xxxv, p. 123, n. sp.

Melampsalta tunisiaca, Tunis, KARSCH, B. E. Z. xxxv, p. 125, n. sp.

✓ *Musoda*, n. g. (*Tibiceninae*), for *M. flavida*, n. sp., W. Africa ; KARSCH, p. 128, B. E. Z. xxxv.

✓ *Pæctira*, n. g., p. 127 (*Tibiceninae*), for *P. dulcis*, n. sp., Zanzibar, p. 128 ; KARSCH, B. E. Z. xxxv.

Perissoneura paradoxa, Port Moresby, p. 191, *acutipennis*, Thursday I., p. 192, KARSCH, Ent. Nachr. xvi, n. spp.

Platypleura : *Pycna*, Am., *Oxypleura*, Am., *Pæcilopsaltria*, Stål, merged in this ; KARSCH, B. E. Z. xxxv, p. 87 ; the African species monographed, pp. 88-105.

Platypleura antiopa, Madagascar, p. 88, *membranacea*, C. Good Hope, *horizontalis*, p. 92, *clypealis*, p. 93, *confusa*, p. 95, *limbalis*, p. 96, *limpida*, p. 97, Trop. Africa, *rudis*, Madagascar, *laticeps*, Senegal, p. 98, *hirta*, Trausvaal, p. 100, *bombifrons*, Zanzibar, p. 102, *radiata*, *virescens*, p. 104, *plagiata*, p. 105, Trop. Africa, KARSCH, B. E. Z. xxxv, n. spp.

Quintilia, note on its composition, with classification and notes on species; KARSCH, B. E. Z. xxxv, pp. 116-121.

Q. vitripennis, *conspersa*, p. 118, *frontalis*, p. 119, S. Africa, KARSCH, B. E. Z. xxxv, n. spp.

Stagira segmentaria, Caffraria, KARSCH, B. E. Z. xxxv, p. 127, n. sp.

↓ *Talainga*, n. g., near *Gwana*, p. 166, for *T. binghami*, n. sp., Burma, p. 167; DISTANT, Ann. N. H. (6) v.

Tibiceninae, classification and tabulation of the African genera of; KARSCH, B. E. Z. xxxv, pp. 108-112.

Tympanoterpes gigas recorded from Madagascar, p. 107, and figured, pl. iv, fig. 12; KARSCH, B. E. Z. xxxv.

FULGORIDÆ.

↑ *Anecphora*, n. g. (*Fulgorinae*, near *Aphana*), for *A. aurantiaca*, n. sp., Sierra Leone; KARSCH, B. E. Z. xxxv, p. 63.

Aphana basiflava, Congo, KARSCH, B. E. Z. xxxv, p. 62, pl. ii, fig. 5, n. sp.

Arcopus conspersinervis, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 151, n. sp.

Asiraca insignicornis, Venezuela, LETHIERRY, p. 150, Ann. Soc. Ent. Fr. (6) x, n. sp.

↑ *Aulophorus*, n. g. (*Flatinae*), for *A. canaliculatus*, n. sp., Delagoa Bay; KARSCH, B. E. Z. xxxv, p. 69.

✓ *Conoprosthilus*, n. g. (*Flatinae*), p. 68, for *C. limbipunctatus*, n. sp., Trop. Africa, p. 69; KARSCH, B. E. Z. xxxv.

Conosimus ochaninei, Turkestan, PUTON, p. 232, Rev. d'Ent. ix, n. sp.

Cyarda granulata, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 150, n. sp.

Dascalua lurida, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 148, n. sp.

Delphax bifasciata, Canada, PROVANCHER, Faune Can. Hem. p. 337; *D. maidis*, Florida, ASHMEAD, Psyche, v, p. 323: n. spp.

↓ *Dichoneura*, n. g., near *Delphax*, p. 151, for *D. simoni*, n. sp., Venezuela, p. 152; LETHIERRY, Ann. Soc. Ent. Fr. (6) x.

Dictyophora anatina, Algeria, PUTON, p. 231, Rev. d'Ent. ix, n. sp.

✓ *Euryprosthilus*, n. g. (*Flatinae*, near *Ormenes*), for *E. latifrons*, n. sp., Madagascar; KARSCH, B. E. Z. xxxv, p. 67.

Flata crassivenosa, pl. ii, fig. 7, *nigritarsis*, Trop. Africa, KARSCH, B. E. Z. xxxv, p. 65, n. spp.

Frutis sinensis, N. China, DISTANT, Ent. xxiii, p. 160, n. sp.

Hyalesthes basalis, Venezuela, LETHIERRY, p. 149, Ann. Soc. Ent. Fr. (6) x, n. sp.

Hysteropterum apterum, Fab., = (*limbatum*, Costa); PUTON, p. 234, Rev. d'Ent. ix.

H. corniculatum, Herzegovina, PUTON, p. 232, Rev. d'Ent. ix, n. sp.

Issus ovifrons, Derbent, p. 232, *jakowleffi*, Shahrud, p. 233, PUTON, Rev. d'Ent. ix; *I. longulus*, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 149 : n. spp.

Ityræa wissmanni, Centr. Africa, KARSCH, B. E. Z. xxxv, p. 65, pl. ii, fig. 6, n. sp.

Latois bicoloripes, Madagascar, KARSCH, B. E. Z. xxxv, p. 68, n. sp.

✓*Metoponitys*, n. g. (*Eurybrachydinae*, near *Olonia*), p. 59, for *M. morgeni*, p. 60, *rudimentarius*, p. 61, pl. ii, fig. 3, n. spp., Trop. Africa; KARSCH, B. E. Z. xxxv.

✓*Paramotus*, n. g. (*Flatinae*), for *P. trivirgatus*, n. sp., Trop. Africa; KARSCH, B. E. Z. xxxv, p. 66.

✓*Paropioxys*, n. g. (*Eurybrachydinae*, near *Loxocephala*, Schaum), p. 57, for *P. opulentus*, pl. ii, fig. 2, *sublimis*, fig. 1, p. 58, *fortunatus*, p. 59, Trop. Africa, n. spp.; KARSCH, B. E. Z. xxxv.

†*Phædokus*, n. g. (*Flatinae*), p. 67, for *P. quadripunctatus*, n. sp., Madagascar, p. 68; KARSCH, B. E. Z. xxxv.

Phantia viridula and *viridipennis*, distinctive characters; PUTON, p. 230, Rev. d'Ent. ix.

Pintalia discoidalis, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 148, n. sp.

Pyrops claviceps, Loango, KARSCH, B. E. Z. xxxv, p. 62, pl. ii, fig. 4, n. sp.

Ricania vitripennis, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 147, n. sp.

CERCOPIDÆ.

Aphrophora cribrata, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 152, n. sp.

Tomuspis equestris, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 152, n. sp.

MEMBRACIDÆ.

Acutalis flaviventris, *retrofasciata*, Venezuela, LETHIERRY, p. 154, Ann. Soc. Ent. Fr. (6) x, n. spp.

Carynota, Fitch, its validity asserted; DUZEE, Psyche, v, p. 391.

Cyphonia furcispina, Venezuela, LETHIERRY, p. 155, Ann. Soc. Ent. Fr. (6) x, n. sp.

Ennya rufo-maculata, Ecuador, FALLOU, Rev. d'Ent. ix, p. 353, n. sp.

Gargara davidi, Pekin, FALLOU, Rev. d'Ent. ix, p. 354, n. sp.

Heliria gounellei, Bahia, FALLOU, Rev. d'Ent. ix, p. 354, n. sp.

Heteronotus trinodosus, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 154, n. sp.

- Hyphinoe marginalis*, Guatemala, FALLOU, Rev. d'Ent. ix, p. 353, n. sp.
Nicomia inermis, retrospinosus, Venezuela, LETHIERRY, p. 155, Ann. Soc. Ent. Fr. (6) x, n. spp.
Oxygonia fasciata, Ecuador, FALLOU, p. 353, Rev. d'Ent. ix, n. sp.
Sphongophorus brunneus, Brazil, FALLOU, Rev. d'Ent. ix, p. 354, n. sp.
Tolania cristata, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 155, n. sp.

JASSIDÆ.

Notes on the habits and ravages of various species in N. America ; OSBORN, Bull. Dep. Agric. Ent. xxii, pp. 20-32.

Agallia limbata, Fieb., = (*dimorpha*, Löw) ; PUTON, p. 234, Rev. d'Ent. ix.

A. oculata, California, VAN DUZEE, Ent. Am. vi, p. 38 ; *A. major*, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 156 : n. spp.

Allygus inscriptus, California, VAN DUZEE, Ent. Am. vi, p. 92, n. sp.

Athysanus striatulus, Fall, ? described ; VAN DUZEE, Ent. Am. vi, p. 134, woodcut.

Bythoscopus pruni, Canada, PROVANCHER, Faune Can. Hem. p. 290, n. sp. ? ; *B. distinctus*, p. 225, *cognatus*, p. 226, N. America, VAN DUZEE, Ent. Am. vi : n. spp.

Deltocephalus chlamidatus, superbus, Canada, PROVANCHER, Faune Can. Hem. p. 339 ; *D. coquilletti*, p. 95, *minutus*, p. 96, California, VAN DUZEE, Ent. Am. vi : n. spp.

Erythroneura mali, Canada, PROVANCHER, Faune Can. Hem. p. 298, n. sp.

Gypona bipunctulata, p. 30, *nigra, albimarginata*, p. 31, *bimaculata*, p. 32, Illinois, WOODWORTH, Bull. Illin. Lab. N. H. iii, n. spp.

Idiocerus nubilus, England, BUCKTON, Mon. Brit. Cic. p. 118, pl. xxxv, fig. 4 ; *I. cratægi*, Canada, DUZEE, Canad. Ent. xxii, p. 110 : n. spp.

Jassus lactipennis, California, VAN DUZEE, Ent. Am. vi, p. 49, n. sp.

Macropsis pubipennis, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 156, n. sp.

Monecphora limbata, Mexico, *marginata*, Madagascar, *ruficollis, rufomaculata*, Ecuador, p. 351, *rugosa*, Madagascar, p. 352, FALLOU, Rev. d'Ent. ix, n. spp.

Pediopsis nubila, California, VAN DUZEE, Ent. Am. vi, p. 37 ; *P. tristis*, Iowa, DUZEE, Canad. Ent. xxii, p. 249 : n. spp.

Platymetopius frontalis, N. America, DUZEE, Canad. Ent. xxii, p. 112 ; *P. elegans*, California, VAN DUZEE, Ent. Am. vi, p. 94 : n. spp.

Scaphoideus scalaris, California, VAN DUZEE, Ent. Am. vi, p. 51, n. sp.

Sphenorhina sipolisi, Brazil, *bicolor*, New Britain, p. 352, *humeralis*, Madagascar, p. 353, FALLOU, Rev. d'Ent. ix, n. spp.

Tettigonia similis, Illinois, WOODWORTH, Bull. Illin. Lab. N. H. iii, p. 25 ; *T. atrovirens*, p. 157, *novemnotata, inflatoseta*, Venezuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x : n. spp.

Thamnotettix lurida, Iowa, VAN DUZEE, Canad. Ent. xxii, p. 250 ; *T. atropunctata*, p. 91, *limbata*, p. 92, California, *T. fitchii*, New Jersey, p. 133, *T. subcneea*, *coquilletti*, p. 77, *geminata*, p. 79, *flavocapitata*, p. 80, California, VAN DUZEE, Ent. Am. vi ; *T. alterninervis*, Venèzuela, LETHIERRY, Ann. Soc. Ent. Fr. (6) x, p. 160 : n. spp.

Typhlocyba unica, Canada, PROVANCHER, Faune Can. Hem. p. 340, n. sp.

PSYLLIDÆ.

Fossil *Psyllidæ* ; SCUDDER (754).

Dirapha quadricornis, p. 306, *sanguinea*, p. 307, Canada, PROVANCHER, Faune Can. Hem., n. spp.

Livia saltatrix, *bifasciata*, Canada, PROVANCHER, Faune Can. Hem., p. 307, n. spp.

Pachypsylla celtidis-vesiculum, *celtidis-astericus*, p. 618, *celtidis-umbilicus*, p. 619, *celtidis-pubescentis*, p. 620, *celtidis-globulus*, *celtidis-cucurbita*, p. 621, N. America, RILEY, in 5th Rep. U. S. Ent. Comm., n. spp.

Psylla recticeps, Canada, PROVANCHER, Faune Can. Hem. p. 305, n. sp.

Rhinocola eucalypti, p. 160, pl. x, figs. 3-16, *fuchsiae*, p. 162, pl. xii, figs. 13-25, New Zealand, MASKELL, Tr. N. Z. Inst. xxii, n. spp.

Trioza pellucida, p. 164, pl. xi, *panacis*, p. 167, pl. xii, figs. 1-12, MASKELL, Tr. N. Z. Inst. xxii, n. spp.

APHIDIDÆ.

[*Cf.* CHOLODKOVSKY (129, 130), ECKSTEIN (210), KRASSILSTCHIK (448), SMITH (797), SMITH (817), WEED (897), WESTWOOD (908).]

Notes on the minute structure of antennæ, &c. ; SMITH, Psyche, v, pp. 409-414, woodcuts.

Aphididæ infested by *Bacilli* ; KRASSILSTCHIK (448).

Fossil *Aphididæ* ; SCUDDER (754).

Aphis dianthi, excessive abundance near Manchester ; CAMERON, Mem. Manch. Soc. (4) ii, p. 9.

A. persicæ-niger, N. America, SMITH, Ent. Am. vi, pp. 101 & 201, n. sp.

Chermes, biological notes on ; CHOLODKOVSKY (129, 130). *C. abietis*, pp. 392-399, *strobilobius* = (*coccineus*, Ratz. part., = *lapponicus*, Chol.), pp. 399-407, *coccineus*, Ratz. part., pp. 408-412, *sibiricus*, pp. 413-419, life-histories, cycles and migrations ; CHOLODKOVSKY, Hor. Ent. Ross. xxiv. *C. strobilobius*, *viridis*, *geniculatus*, *corticalis*, notes on life-histories of ; ECKSTEIN, Zool. Anz. xiii, pp. 86-90.

C. sibiricus, CHOLODKOVSKY, Rev. Sci. Nat. Pet. i, p. 310, n. sp. ? [*cf.* Zool. Rec. xxvi, *Ins.* p. 298].

Lachnus strobili, *dentatus*, *pini*, forms of, described, pp. 116-118, figured pls. vi & vii ; WEED, Bull. Ohio Exp. Stat. Tech. ser. i.

Melanoxanthus salicis, forms described and figured, pp. 113 & 114, pl. iv, figs. 1-4, *salicis*, p. 115, pl. v, figs. 1-3 ; WEED, Bull. Ohio Exp. Stat. Tech. ser. i.

Myzus cerasi, L., forms of, described and figured ; WEED, pp. 111-113, pl. iii, figs. 1-5, Bull. Ohio Exp. Stat. Tech. ser. i.

Pemphigus alni, Canada, PROVANCHER, Faune Can. Hem. p. 320, n. sp.

Schizoneura corni, observations on, concluding that it, *S. venusta*, Pass., *panicola*, Thos., *Eriosoma fungicola* and *cornicola*, Walsh, are all one species ; OSBORN, pp. 32-40, Bull. Dep. Agric. Ent. xxii.

Siphonophora avenæ, Fab., notes on it and its parasites ; WEBSTER, pp. 64-72, Bull. Dep. Agric. Ent. xxii, and RILEY, Rep. 1889, pp. 348-355, pls. i & vi.

*S. artocarp*i, Ceylon, WESTWOOD, Tr. E. Soc. 1890, p. 649, pl. xxi, n. sp.

ALEURODIDÆ, COCCIDÆ.

[Cf. DOUGLAS (183), HUDSON (388), KOEBELE (436), MASKELL (512, 513, 514, 515), MORGAN (556), RILEY & HOWARD (696), TARGIONI-TOZZETTI & FRANCESCHINI (844), WARD (878).]

Note on habits of *Coccidæ* ; MASKELL, Ent. M. M. (2) i, p. 277.

Fossil *Coccidæ* ; SCUDDER (754).

Aleurodes sacchari, Fiji Is., p. 171, pl. xiii, figs. 1-10, *papillifer*, figs. 11-17, *asplenii*, figs. 18-20, p. 173, *melicyti*, fig. 21-24, p. 174, *fagi*, figs. 25 & 26, *simplex*, fig. 27, p. 175, New Zealand, MASKELL, Tr. N. Z. Inst. xxii, n. spp.

Aspidiotus aurantii, *rossi*, &c., noticed ; KOEBELE, Bull. Dep. Agric. Ent. xxi, pp. 10 & 11.

*Chionaspis dysoxyl*i, food plants and apterous male noticed ; MASKELL, Tr. N. Z. Inst. xxii.

Cælostoma australe, Sydney, MASKELL, P. Linn. Soc. N.S.W. (2) v, p. 280, pl. xv ; *C. assimile*, New Zealand, MASKELL, p. 153, pl. ix, figs. 19-24, Tr. N. Z. Inst. xxii : n. spp.

✓ *Crossotosoma*, n. g., for *C. ægyptiacum*, Alexandria, n. sp. ; DOUGLAS, p. 79, Ent. M. M. (2) i.

Crossotosoma is not distinct from *Icerya* ; RILEY & HOWARD, Ins. Life, iii, p. 97.

↓ *Cryptococcus*, n. g., next *Xylococcus* for *Coccus fagi*, Baer. ; DOUGLAS, Ent. M. M. (2) i, p. 155.

Diaspis, synonymical and biological notes on *D. ostreæformis* and other species ; MORGAN, Ent. M. M. (2) i, pp. 42-44. *D. pentagona* described and figured ; TARGIONI-TOZZETTI & FRANCESCHINI, Bull. Ent. Ital. xxi, pp. 58-66, pl. i.

D. zamia, on *Zamia villosa*, in a conservatory at Oporto ; MORGAN, Ent. M. M. (2) i, p. 44, n. sp.

Dactylopius ephedre, California, COQUILLETT, West Am. Scientist, vii, p. 43 ; *D. cocotis*, Fiji Is., p. 149, pl. iv, fig. 16-24, *arecæ*, pl. viii, figs. 1-6, *aurilanatus*, p. 151, figs. 7-18, *obtectus*, p. 152, pl. vi, figs. 12-21, New Zealand, MASKELL, Tr. N. Z. Inst. xxii : n. spp.

Eriococcus raithbyi, New Zealand, MASKELL, Tr. N. Z. Inst. xxii, p. 145, pl. ix, figs. 1-18, n. sp.

Gossyparia and *Eriococcus*, generic distinctions discussed; MASKELL, p. 146, Tr. N. Z. Inst. xxii.

G. cavellii, New Zealand, MASKELL, Tr. N. Z. Inst. xxii, p. 147, pl. vii, figs. 13-22, n. sp.

Icerya, monograph of; RILEY & HOWARD, *Ins. Life*, iii, pp. 92-106. *I. purchasi*, observations on, in Australia; KOEBELE (436): in Tasmania, association with ants and destruction by *Coccinella*, sp.; HUDSON, Tr. N. Z. Inst. xxii, p. 176: destruction of in New Zealand; MASKELL, Ent. M. M. (2) i, p. 17.

I. rosa, Florida, p. 93, *montserratensis*, W. India, pp. 99-101, *palmeri*, Mexico, p. 104, RILEY & HOWARD, *Ins. Life*, iii, n. spp.

Lecanium fuscum, descriptive note; DOUGLAS, Ent. M. M. (2) i, p. 318.

L. robiniarum, Hungary, DOUGLAS, Ent. M. M. (2) i, p. 318; *L. chirimoliae*, Fiji Is., MASKELL, Tr. N. Z. Inst. xxii, p. 137, pl. iv, figs. 5-15: n. spp.

Monophlaebus crawfordi noticed and figured; KOEBELE (436), pp. 20 & 21.

Mytilaspis linearis, p. 226, *buxi*, *pinnæformis*, p. 229, *ficus*, p. 230, descriptive and synonymical notes on; MORGAN, Ent. M. M. (2) i.

M. grisea, p. 133, pl. iv, fig. 1, *pallens*, p. 134, figs. 2-4; MASKELL, Tr. N. Z. Inst. xxii, n. spp.

Pseudococcus aceris, adult ♀ described; DOUGLAS, Ent. M. M. (2) i, p. 153.

P. quercus on *Quercus robur* at Hereford; DOUGLAS, Ent. M. M. (2) i, p. 154; *P. yuccæ*, California, COQUILLET, West Am. Scientist, vii, p. 44: n. spp.

Pulvinaria ribesiae, notes on, with description of ♂; DOUGLAS, Ent. M. M. (2) i, p. 238.

Rhizococcus totaræ, p. 142, pl. vi, figs. 1-11, *pulchellus*, p. 143, pl. vii, figs. 1-5, *maculatus*, p. 144, pl. vii, figs. 6-12, New Zealand, MASKELL, Tr. N. Z. Inst. xxii, n. spp.

↓ *Solenophora*, n. g., *Acanthococcidæ*, for *S. fagi*, pl. v, figs. 1-18, p. 139; *corokiae*, p. 141, pl. v, figs. 19-24, n. spp., New Zealand; MASKELL, Tr. N. Z. Inst. xxii.

(F). *NEUROPTERA*.

Closure of the tracheal system in the early stages discussed ; DEWITZ (166, 167).

TRICHOPTERA.

[Cf. Klapálek (433, 434), MORTON (557), SCUDDER (754), WALLENGREN (874), WOOD-MASON (926).]

Wallengren's classification and synonymy of Scandinavian *Trichoptera* noticed ; MACLACHLAN, Ent. M. M. (2) i, pp. 212-214.

Fossil *Trichoptera* ; SCUDDER (754).

Beraea maurus, metamorphoses ; MORTON, Ent. M. M. (2) i, p. 231, woodcuts.

Beraodes minuta, L., metamorphoses ; MORTON, Ent. M. M. (2) i, p. 233, woodcuts.

Hydroptila maclachlani, Bohemia, Klapálek, p. 177, SB. Ak. Wien, 1890, n. sp.

Tinodes wæneri and *aureola*, metamorphoses ; MORTON, Ent. M. M. (2) i, pp. 38-42, woodcuts.

Molanna angustata, larva and case ; MORTON, Ent. M. M. (2) i, pp. 128-131, woodcuts.

Notanotica vivipara, E. India (a viviparous species) ; WOOD-MASON, Ann. N. H. (6) vi, pp. 139-141, woodcut, n. sp.

Odontocerum albicorne, metamorphoses ; MORTON, Ent. M. M. (2) i, pp. 181-184, woodcuts.

Oxyethira costalis, Curt., metamorphoses ; Klapálek, SB. Böhm. Ges. 1890, pp. 204-208, pl. ix.

O. frici, Bohemia, Klapálek, p. 182, SB. Böhm. Ges. 1890, n. sp.

Phryganea flavilatera, L., and other Linnæan names discussed ; WALLENGREN, Ent. Tidskr. xi, pp. 10-17.

NEUROPTERA-PLANIPENNIA.

New fossil forms ; SCUDDER (754).

PSEUDO-NEUROPTERA.

THYSANURA and COLLEMBOLA.

[Cf. CASEY (122), FERNALD (253), GRASSI & ROVELLI (324), MONIEZ (548, 549), OUDEMANS (586), UZEL (857).]

Classification of the *Thysanura* proper, adopting two groups, *Entotrophi* and *Ectotrophi*, and four families, *Campodeidae*, *Japygidae*, *Machilidae*, *Lepismatidae*; GRASSI & ROVELLI (324).

Note on the habits of marine *Thysanura*; MONIEZ (549).

Fossil *Thysanura*; SCUDDER (754).

Achorutes socialis, p. 69, *sigillatus*, p. 70, Bohemia, UZEL, SB. Böhm. Ges. 1890; *A. crassus*, Sumatra, OUDEMANS, in Weber Ergeb. i, p. 90 : n. spp.

Anura fortis, Java, OUDEMANS, in Weber Ergeb. i, p. 91, n. sp.

Anurida maritima, anatomy of; FERNALD (253).

Cyphodeirus albinus, habits; MONIEZ, Rev. Biol. iii, p. 64.

Entomobrya dorsalis, p. 60, pl. i, fig. 6, *puncteola*, p. 61, pl. i, fig. 5, Bohemia, UZEL, SB. Böhm. Ges. 1890; *E. florensis*, Flores, p. 86, pl. vii, fig. 15, *longicornis*, Java, fig. 14, p. 87, OUDEMANS, in Weber Ergeb. i : n. spp.

† *Gastrotheus*, n. g., indicating a new family of *Thysanura*, with *G. termitarius* for type; CASEY, p. 503, Ann. N. York Ac. v.

Isotoma pulchella, Croisic, MONIEZ, Rev. Biol. ii, p. 431; *I. palliceps*, pl. ii, figs. 1-3, *voraginum*, Bohemia, UZEL, SB. Böhm. Ges. 1890, p. 65 : n. spp.

Japyx indicus, Malay Arch., OUDEMANS, in Weber Ergeb. i, p. 77, pl. vi, figs. 3-5, n. sp.

† *Lepidocampa*, n. g. (*Campodeidae*), for *L. weberi*, n. sp., Malay Arch.; OUDEMANS, in Weber Ergeb. i, p. 76, pl. vii, figs. 6-13.

Lepidocyrtus neglectus, Croisic, MONIEZ, Rev. Biol. ii, p. 430; *L. paradoxus*, p. 50, *fucatus*, p. 52, Bohemia, UZEL, SB. Böhm. Ges. 1890; *L. variabilis*, p. 84, *javanicus*, p. 85, Java, OUDEMANS, in Weber Ergeb. i : n. spp.

Lepisma saccharina, anatomy of; FERNALD (253). *L. aurea*, Duf., note on; WASMANN, Deutsche e. Z. 1890, p. 300.

L. cincta, p. 80, pl. vi, fig. 1, *nigra*, p. 82, pl. vi, fig. 2, Java, OUDEMANS, in Weber Ergeb. i, n. spp.

Lipura tuberculata, France, MONIEZ, Rev. Biol. iii, pp. 66 & 67, n. sp.

Macrotoma montana, Sumatra, OUDEMANS, in Weber Ergeb. i, p. 84, n. sp.

Orchesella alticola, Bohemia, UZEL, p. 45, pl. i, fig. 4, SB. Böhm. Ges., n. sp.

Sira trouessarti, Croisic, MONIEZ, Rev. Biol. ii, p. 429; *S. annulicornis*, Java, p. 87, *sumatrana*, Sumatra, p. 88, OUDEMANS, in Weber Ergeb. i : n. spp.

Smynthurus aquaticus, notes on; BROWNE, J. Quek. Club (2) iv, pp. 62-64, pl. v.

S. rex, pl. i, fig. 2, *frontalis*, fig. 3, p. 37, Bohemia, UZEL, SB. Böhm. Ges. 1890, n. spp.

† *Thermobia*, n. n. for *Thermophila*, Gr.; *Lepisma domestica*, Pack., referred to it; BERGROTH, Ent. Am. vi, p. 233.

Thermophila furnorum, ROV., note on its characters; OUDEMANS, Nat. Sicil. ix, pp. 253-255.

Xenylla longispina, Bohemia, UZEL, p. 71, SB. Böhm. Ges. 1890, n. sp.

MALLOPHAGA.

[Cf. BEZZI (53), PIAGET (604, 605).]

Mallophaga adhering to a fly parasitic on birds; SHARP, P. E. Soc. 1890, p. xxx.

Colpocephalum temporale on *Macroglossus aterrimus*, p. 252, pl. x, fig. 6; *pungens* on *Calorais panayensis*, p. 253, fig. 7; *patellatum* on *Numenius arquatus*, p. 254, fig. 8; *ciliatum* on *Tetraogallus cuvieri*, p. 256, fig. 9; *nanum* on *Larus canus*, p. 257, fig. 10; *pachypus* on *Prionites brasiliensis*, p. 258, fig. 11; PIAGET, Tijdschr. Ent. xxxiii, n. spp.

Docophorus piageti = (*bisignatus*, Piag., nec N. & G.), on *Ara macao*, BEZZI, Bull. Ent. Ital. xxii, pp. 33-36; *D. duplicatus* on *Ceryla rudis*, p. 223, pl. viii, fig. 1; *paraboliceps* on *Menura lyra*, p. 224, fig. 2; *hamato-fasciatus* on *Penelopides manilla*, p. 225, fig. 3; PIAGET, Tijdschr. Ent. xxxiii : n. spp.

Goniocotes haplogonus, NITZCH, figured, pl. ix, fig. 1, described p. 236; PIAGET, Tijdschr. Ent. xxxiii.

G. pallidiflavus on *Megacephalum maleo*, PIAGET, p. 235, pl. viii, fig. 11, Tijdschr. Ent. xxxiii, n. sp.

Goniodes suborbiculatus on *Goura victoriae*, PIAGET, p. 237, pl. ix, fig. 2, Tijdschr. Ent. xxxiii, n. sp.

Lipeurus porrectus on *Buceros bicornis*, p. 239, pl. ix, fig. 3; *latifasciatus* on *Megapodium freycineti*, p. 240, fig. 4; *tsade* on *Megacephalum calao*, p. 241, fig. 5; *breviceps* on *Diomedea exulans*, p. 243, fig. 6; *gracilentus* on *Ibis rubra*, p. 244, fig. 7; *saturnator* on *Tochus erythrorhynchus*, p. 246, pl. x, fig. 1; *unguiculatus* on *Herodias novæ hollandiæ*, p. 247, fig. 2, PIAGET, Tijdschr. Ent. xxxiii, n. spp.

Menopon affine on *Diomedea exulans*, p. 248, pl. x, fig. 3; *circinatum* on *Stercorarius pomarinus*, p. 249, fig. iv; *popellus* on *Podoc. senegalensis*, p. 251, fig. 5; PIAGET, Tijdschr. Ent. xxxiii, n. spp.

Nirmus assimilis on *Ægialitis asiatica* in Norfolk, PIAGET, P. E. Soc. 1890, p. xxiii; *N. albescens* on *Sarcophamphus gryphus*, p. 226, pl. viii, fig. 4; *trinton* on *Macrocerus macao*, p. 227, fig. 5; *temporalis* on *Buceros manillensis*, p. 228, fig. 6; *immaculatus* on *Edicnemus crepitans*, p. 230, fig. 7; *semicingulatus* on *Strepsilas collaris*, p. 231, fig. 8; *castaneus* on *Sula piscatrix*, p. 232, fig. 9; PIAGET, Tijdschr. Ent. xxxiii : n. spp.

Nitzschia pulicare, its period of development; OSBORN, Ins. Life, iii, p. 115.

Onophorus turbinatus on *Mycteria senegalensis*, PIAGET, p. 233, pl. viii, fig. 10, Tijdschr. Ent. xxxiii, n. spp.

Trichodectes sp. found on *Erinaceus europæus*; BEZZI, Bull. Ent. Ital. xxii, p. 36.

TERMITIDÆ, EMBIIDÆ, THYSANOPTERA.

Thysanoptera, structure of the head and mouth ; GARMAN, Canad. Ent. xxii, p. 215.

Termites of Panama ; DUDLEY (191).

Embia, systematic position discussed ; GRASSI (323).

PSOCIDÆ.

[*Cf.* LOENS (487, 488, 489), MACLACHLAN (503).]

Dimorphism in females of several genera and species noticed ; LOENS, Ent. Nachr. xvi, p. 11.

Fossil *Psocidæ* ; SCUDDER (754).

Amphigerontia, note on characters of ; MACLACHLAN, Ent. M. M. (2) i, p. 288.

Elipsocus consimilis, England, MACLACHLAN, Ent. M. M. (2) i, p. 269, n. sp.

Psocus quadrimaculatus, Latr., = (*subnebulosus*, Steph.) ; MACLACHLAN, Ent. M. M. (2) i, p. 287. *P. sexpunctatus*, albinism in ; LOENS, Ent. Nachr. xvi, p. 49.

Psyllipsocus ramburii, injurious in houses ; BERTKAU, Verh. Ver. Rheinl. xlvii, p. 64.

EPHEMERIDÆ.

Fossil *Ephemeridæ* ; SCUDDER (754).

Hexagenia albivitta, Wlk., *bilineata*, Say, *limbata*, Pict., notes on ; HAGEN, S. E. Z. li, pp. 11-13.

Prosopistoma foliaceum, anatomy of larva, with some notes on *P. variegatum* ; VAYSSIÈRE (858).

ODONATA.

[*Cf.* CALVERT (107), HAGEN (339, 340, 341, 342), KARSCH (412, 413, 414), KIRBY (428, 430), RODZIANKO (708), SELYS (768, 769).]

Synonymic catalogue of *Odonata* ; KIRBY (428).

Catalogue of the Sumatran *Odonata*, with remarks on characters, descriptions of some imperfectly known species, and other observations ; SELYS, Ann. Mus. Genov. (2) vii, pp. 444, &c.

Notes on the oviposition of some species of *Libellula* and *Platythemis* ; BEUTENMÜLLER, Ent. Am. vi, pp. 165 & 166.

Notes on swarms of *Libellula quadrimaculata* ; Tijdschr. Ent. xxxiii, pp. xviii-xxii.

Fossil *Odonata* ; SCUDDER (754).

The paper recorded, Zool. Rec. xxvi, *Ins.* Titles 91, BORRE, alphabetical list of specific names of *Libellulinae* appeared in Mém. Liège, xvi, Mém. 4.

Acanthagyna, n. n., to replace *Gynacantha*, Selys, nec Ramb. ; KIRBY, Cat. p. 94.

Æschna sitchensis, septentrionalis, redescribed ; HAGEN, *Psyche*, v, pp. 353 & 354.

Æshna, Æschna, Gomphus, synonymical discussion ; *Gomphus* to be retained ; SELYS, p. clxi, C.R. Ent. Belg. 1890.

Agrion to be used for *Calopteryx*, auct. ; KIRBY, Cat. p. 96.

Aino, n. g., = (*Nannophya*, Kirby, nec Ramb.), for *A. puella*, n. sp., Malay Arch. ? ; KIRBY, Ann. N. H. (6) v, p. 113.

Amphicnemis ecornuta, Sumatra, SELYS, Ann. Mus. Genov. (2) vii, p. 482, n. sp.

Anax, characters and synonymy of the N. American species ; HAGEN, *Psyche*, v, pp. 303-307.

✓*Archibasis*, n. n., to replace *Stenobasis*, Selys ; KIRBY, Cat. p. 156.

✓*Caconeura*, n. n., to replace *Alloneura*, Selys ; KIRBY, Cat. p. 134.

✓*Cænoneura*, n. n., to replace *Neoneura*, Selys ; KIRBY, Cat. p. 136.

Calopteryx, notes on the species of ; SELYS, C.R. Ent. Belg. 1890, pp. cxvi-cxviii.

Celithemis, notes on the N. American species ; HAGEN, *Psyche*, v, pp. 383 & 384.

✓*Cæliccia*, n. n., to replace *Trichocnemis*, Selys ; KIRBY, Cat. p. 128.

✓*Clenagrion*, n. n., to replace *Agrion* (Fab.), Leach, KIRBY, Cat. p. 148, but the name to be suppressed ; SELYS, p. clxii, C.R. Ent. Belg. 1890.

✓*Copera*, n. n., to replace *Psilocnemis*, Selys ; KIRBY, Cat. p. 129.

Cordulia lintneri redescribed, appendages figured ; HAGEN, p. 371, pl. i, figs. 10-17.

✓*Devadatta*, n. n., to replace *Tetraneura*, Selys ; KIRBY, Cat. p. 111.

Diastatomma to be used in place of *Longchampia*, Kirby ; SELYS, p. clxi, C.R. Ent. Belg. 1890.

Diplax rubicundula, madida, flavicosta, redescribed ; HAGEN, pp. 385 & 386, *Psyche*, v.

Epitheca walshii, ♀ described ; CALVERT, Tr. Am. Ent. Soc. xvii, p. 33.

E. yamaskanensis and *obsoleta*, described and distinguished ; HAGEN, pp. 367-371, *Psyche*, v.

Gomphides : notes on the classification, with tabular characters of the genera, and some species of Africa and Madagascar ; KARSCH, Ent. Nachr. xvi, pp. 370 & 382.

Gomphus, Leach, auct., to be called *Æshna* ; KIRBY, Cat. p. 64.

Leptthemis gravis, N. America, CALVERT, Tr. Am. Ent. Soc. xvii, p. 35, n. sp.

Leucorhinia hudsonica, Sel., = (*hageni*, Calvert) ; CALVERT, Ent. News, i, p. 73.

L. frigida, borealis, p. 231, *glacialis*, p. 234, N. America, HAGEN, Tr. Am. Ent. Soc. xvii ; *L. hageni*, Nova Scotia, p. 36, *proxima* (Hagen), p. 38, N. America, CALVERT, Tr. Am. Ent. Soc. xvii : n. spp.

Libellula incesta redescribed ; HAGEN, p. 384, *Psyche*, v : ♀ described ; CALVERT, Tr. Am. Ent. Soc. xvii, p. 34.

Lindenia to be used instead of *Vanderia*, Kirby ; SELYS, p. clxi, C.R. Ent. Belg. 1890.

- ✓ *Longchampia*, n. n., to replace *Diastatomma*, Burm. ; KIRBY, Cat. p. 76.
Mecistogaster lucretia, Dr., and *marchali*, Ramb., synonymical note ;
 SELYS, pp. cxix and clxiv, C.R. Ent. Belg. 1890.
Micrathyria hemimelæna, Sarayacu, KARSCH, S. E. Z. li, p. 296, n. sp.
 ✓ *Microdiplax*, n. subg. of *Brachydiplax*, p. 457, for *M. delicatula*, n. sp.,
 Sumatra, p. 459 ; SELYS, Ann. Mus. Genov. (2) vii.
 ✓ *Micronympha*, n. n., to replace *Ischnura*, Charp. ; KIRBY, p. 140.
 ✓ *Neurogomphus*, n. g., for *N. fuscifrons*, n. sp., Cameroons ; KARSCH,
 Ent. Nachr. xvi, p. 380.
 ✓ *Oligoæschna*, Selys, n. subg., *Æshnina*, p. 470, for *O. modiglianii*, n. sp.,
 Nias I., p. 471 ; SELYS, Ann. Mus. Genov. (2) vii.
Onychogomphus lacustris, Tanganyika, p. 377, *madegassus*, Madagascar,
abnormis, Cameroons, p. 378, KARSCH, Ent. Nachr. xvi, n. spp.
 ✓ *Pentathemis*, n. g. (*Corduliinae*), p. 33, for *P. membranulata*, n. sp., Torres
 Straits, p. 34, KARSCH, Ent. Nachr. xvi.
 ✓ *Philoganga*, n. n., to replace *Anisoneura*, Selys ; KIRBY, Cat. p. 111.
 ✓ *Podogomphus*, n. g., for *P. spinosus*, n. sp., W. Africa ; KARSCH, Ent.
 Nachr. xvi, p. 381.
 ✓ *Pseudophæa*, n. n., to replace *Euphæa*, Ramb. ; KIRBY, Cat. p. 109.
Rhyothemis fulgens, p. 450, *curiosa*, p. 451, Sumatra, SELYS, Ann. Mus.
 Genov. (2) vii, n. spp.
 ✓ *Steropoides*, n. n., for *Sterope*, Heer ; KIRBY, Cat. p. 176.
 ✓ *Teinobasis*, n. n., to replace *Telebasis*, Selys ; KIRBY, Cat. p. 157.
Thermochoria, Kirby, characters of ; KARSCH, S. E. Z. li, p. 295.
 ✓ *Umma*, n. n., to replace *Cleis*, Selys ; KIRBY, Cat. p. 100.
 ✓ *Vandieria*, n. n., to replace *Lindenia*, Selys ; KIRBY, Cat. p. 78.
 ✓ *Zonothrasyis*, n. g., near *Sympetrum*, Newm., for *Z. partitus*, n. sp. ;
 Benué ; KARSCH, p. 297, S. E. Z. li.
 ✓ *Zoræna*, n. n., to replace *Thecaphora*, Selys ; KIRBY, Cat. p. 79.
Zyxomma atlanticum, W. Africa, SELYS, Ann. Mus. Genov. (2) vii,
 p. 449, n. sp.

(G.) ORTHOPTERA.

[Cf. BOLIVAR (70, 71, 72), BRONGNIART (91, 93), BRUNNER (97), CONTE-JEAN (141, 142), COSTA (147), COTES (150, 151), FINOT (258), GODING (315), HAASE (338), HALJ (344), HENNEGUY (355), JAMMES (406), KARSCH (415, 416, 417, 418), KIRBY (429), KRAUSS (449, 450, 451), KÜNCKEL (461, 462), LAMEERE (469), MINCHIN (543), PANTEL (596), RODZIANKO (708), SABATIER (717), SAJO (718), SCUDDER (754, 756, 757, 761), TEPPER (847), VIALLANES (867), VOSSELER (869), WASMANN (883), WHEELER (912, 913), WOOD-MASON (924, 925).]

New family of fossil *Orthoptera*, see BRONGNIART (91), and Palæoentomology, p. 92.

FORFICULIDÆ.

Bibliographic revision of names of genera proposed previous to 1840 ; KIRBY, P. R. *Dubl. Soc.* vi, pp. 558 & 559.

Fossil *Forficulidæ* ; SCUDDER (754).

The stink-glands of *Forficulidæ* described ; VOSSELER (869).

BLATTIDÆ.

Bibliographic revision of the names of genera proposed previous to 1840 ; KIRBY, P. R. *Dubl. Soc.* vi, pp. 560-563.

Fossil *Blattidæ* ; SCUDDER (754, 756, 757).

Blatta sp., parts of the mouth in ; HOWARD, P. E. *Soc. Wash.* p. 216.

B. germanica, dorsal gland of ; MINCHIN (543).

Derocalymma brunneriana, C. Good Hope, COSTA, *Rend. Acc. Nap.* (2) iv, p. 174, n. sp.

Homalopteryx capucina, ♀ described ; BOLIVAR, *Ann. Soc. Ent. Fr.* (6) x, p. 137.

Ochrophlebia ? *savignyi*, Egypt, KRAUSS, *Verh. z.-b. Wien*, xl, p. 261 ; figured in Savigny *Descr. de l'Égypte Orthop.* pl. vi, fig. 15, : n. sp.

Panchlora brazze, Congo, BOLIVAR, p. 303, *An. Soc. Esp.* xix, n. sp.

Periplaneta orientalis and *americana*, dorsal gland of ; MINCHIN (543).

P. savignyi, Egypt, KRAUSS, *Verh. z.-b. Wien*, xl, p. 242, figured in Savigny *Descr. de l'Égypte Orthop.* pl. i, fig. 13, n. sp.

Phyllodromia germanica in N. America ; RILEY, *Ins. Life*, ii, p. 267.

Stilopyga nitida, Philippines, BOLIVAR, p. 302, *An. Soc. Esp.* xix, n. sp.

Temnopteryx dimidiatipes, Philippines, p. 300, pl. i, fig. 1, *brachyptera*, N. Africa, p. 301, fig. 2, BOLIVAR, An. Soc. Esp. xix, n. spp.

Thyrsochera lineaticollis, Sumatra, BOLIVAR, p. 302, An. Soc. Esp. xix, n. sp.

MANTIDÆ.

Ootheca of a Madagascar species noticed ; LUCAS, p. cxxxi, Bull. Soc. Ent. Fr. 1890.

Bibliographic revision of the names of genera proposed previous to 1840 ; KIRBY, P. R. Dubl. Soc. vi, pp. 564-569.

✓ *Blepharodes*, n. g., *Empusides*, p. 305, for *B. candelarius*, n. sp., Mogadix, p. 306, pl. i, fig. 4 ; BOLIVAR, An. Soc. Esp. xix.

Compsomantis tumidiceps, Philippines, BOLIVAR, p. 303, An. Soc. Esp. xix, n. sp.

Harpax ocellata in confinement, notes on ; THOMSON, P. Z. S. 1890, p. 95.

✓ *Otomantis*, n. g., near *Acromantis*, p. 304, for *O. scutigera*, n. sp., Lourenço Marques, p. 305, pl. i, fig. 3 ; BOLIVAR, An. Soc. Esp. xix.

✓ *Parymenopus*, n. g., near *Hymenopus*, for *P. davisoni*, n. sp., Singapore ; WOOD-MASON, p. 437, Ann. N. H. (6) v.

✓ *Triænocorypha*, n. g., near *Oxypilus*, p. 439, for *P. dohertii*, n. sp., Perak, p. 440, pl. xviii ; WOOD-MASON, Ann. N. H. (6) v.

PHASMATIDÆ.

Bibliographic revision of the names of genera proposed previous to 1840 ; KIRBY, P. R. Dubl. Soc. vi, pp. 569-574.

Fossil *Phasmatidæ* ; SCUDDER (754).

Revision of the *Phasmides* of Europe and neighbouring countries ; PANTEL, An. Soc. Esp. xix, pp. 371-422.

Bacillus algericus, Oran, PANTEL, An. Soc. Esp. xix, p. 394, n. sp. (? = *gallicus* var.).

Diapheromera femorata in confinement ; THOMSON, P. Z. S. 1890, p. 96.

✓ *Leptynia*, n. g., p. 385, for *L. attenuata*, n. sp., Iberia, p. 402, pl. iv, figs. 20, &c., and *Bacillus hispanicus*, Bolivar ; PANTEL, An. Soc. Esp. xix.

Obrimus quadratipes, Philippines, BOLIVAR, p. 307, An. Soc. Esp. xix, n. sp.

Phyllium crurifolium, minute structure of egg-shell ; HENNEGUY (355).

Pygrrhynchus iphiclus, Westw., referred to *Caulonia* ; BOLIVAR, p. 138, Ann. Soc. Ent. Fr. (6) x.

Tisamenus cervicornis, p. 307, pl. i, fig. 5, *asper*, p. 308, Philippines, BOLIVAR, An. Soc. Esp. xix, n. spp.

GRYLLIDÆ.

Bibliographic revision of the names of genera proposed previous to 1840 ; KIRBY, P. R. Dubl. Soc. vi, pp. 574-577.

Fossil *Gryllidæ* ; SCUDDER (754).

Brachytrypus megacephalus, Serv., habits described ; FOREL, MT. Schw. ent. Ges. viii, pp. 247-250.

B. politus, Centr. Africa, BOLIVAR, p. 328, An. Soc. Esp. xix, n. sp.

Gryllomorpha, revision of ; PANTEL, An. Soc. Esp. xix, pp. 335-370.

G. kruperi, Greece, p. 362, pl. iii, fig. 4, *uclensis*, Spain, p. 364, figs. 5a, b, PANTEL, An. Soc. Esp. xix, n. spp.

Laranda annulata, Brazil, BOLIVAR, p. 331, An. Soc. Esp. xix, n. sp.

Myrmecophila salomonis, N. Africa, WASMANN, Deutsche e. Z. 1890, p. 303, n. sp.

✓ *Nemobiopsis*, n. g., near *Pentacenthrus*, p. 329, for *N. gundlachi*, n. sp., Cuba, p. 330, pl. i, fig. 10 ; BOLIVAR, An. Soc. Esp. xix.

Phaeophyllacris semialata, *angolensis*, Angola, BOLIVAR, p. 231, J. Sci. Lisb. (2) i, n. spp.

✓ *Posus*, n. g., near *Homæogryllus*, for *P. mictiformis*, n. sp., Madagascar ; BOLIVAR, p. 332, An. Soc. Esp. xix.

✓ *Xenogryllus*, n. g., near *Eneopterus*, for *X. eneopteroideus*, n. sp., Trop. Africa ; BOLIVAR, J. Sci. Lisb. (2) i, p. 232.

LOCUSTIDÆ.

Bibliographic revision of the names of genera proposed previous to 1840 ; KIRBY, P. R. Dubl. Soc. vi, pp. 577-586.

Fossil *Locustidæ* ; SCUDDER (754).

✓ *Acilacris*, n. g., *Meconemides*, near *Cyrtaspis*, p. 219, for *A. tridens*, Angola, p. 220, n. sp. ; BOLIVAR, J. Sci. Lisb. (2) i.

Amytta and allies, corrected characters ; KARSCH, Ent. Nachr. xvi, p. 264.

A. occidentalis, W. Africa, KARSCH, Ent. Nachr. xvi, p. 264 ; *A. mutilata*, W. Africa, KARSCH, t. c. p. 367 : n. spp.

Arantia latifolia, p. 356, *orthocnemis*, p. 357, *leptocnemis*, p. 358, W. Africa, KARSCH, Ent. Nachr. xvi, n. spp.

Borborothis brunneri, Angola, BOLIVAR, p. 227, J. Sci. Lisb. (2) i, n. sp.

✓ *Catoptropteryx*, n. g. (*Ephippithytæ*), p. 361, for *C. guttatipes*, n. sp., W. Africa ; KARSCH, Ent. Nachr. xvi.

Cædicia punctulata, W. Africa, KARSCH, Ent. Nachr. xvi, p. 260, n. sp.

✓ *Ceratopompa*, n. g. (*Phaneropteridæ*, near *Zulpha*), p. 57, for *C. festiva*, n. sp., Java, p. 58 ; KARSCH, Ent. Nachr. xvi.

✓ *Chondrodera*, n. g. (*Pseudophyllidæ*, near *Cymatomera*), p. 266, for *C. notatipes*, n. sp., W. Africa, p. 267 ; KARSCH, Ent. Nachr. xvi.

✓ *Cloanthella*, n. g., near *Conocephalus*, for *C. clypeata*, n. sp., Trop. Africa ; BOLIVAR, p. 226, J. Sci. Lisb. (2) i.

Conocephalus lineatipes, Angola, BOLIVAR, p. 225, J. Sci. Lisb. (2) i, n. sp.

Corycus, Sauss. : systematic position, habitat, stridulation, &c., discussed ; KRAUSS, Zool. Jahrb. Abth. f. Syst. v, pp. 344, &c.

C. abruptus, Gaboon, p. 354, pl. xxx, fig. 2, *karschi*, fig. 8, *præmorsus*,

fig. 4, p. 355, Cameroons, *greeffi*, p. 356, figs. 5, 5a-j, islands off the coast of Guinea, KRAUSS, Zool. Jahrb. v ; *C. paradoxus*, Trop. Africa, BOLIVAR, p. 220, J. Sci. Lisb. (2) i : n. spp.

Dapanera irregularis, W. Africa, KARSCH, Ent. Nachr. xvi, p. 258, n. sp.

Decticus, respiration of : detachment of hind legs by shock ; CONTEJEAN (141, 142).

D. japonicus, Yezo, BOLIVAR, p. 327, An. Soc. Esp. xix, n. sp.

↓ *Dithela*, n. g. (*Pyrrhicia*), p. 354, for *D. rectiloba*, n. sp., W. Africa, p. 355, fig. 1 ; KARSCH, Ent. Nachr. xvi.

↓ *Drepanophyllum*, n. g. (*Otiaphysæ*), p. 358, for *D. marmoratum*, n. sp., W. Africa, p. 360, fig. 2 ; KARSCH, Ent. Nachr. xvi.

Ephippigera crucigera and *vitium*, synonymy queried, habits of former ; SCHUCH, MT. Schw. ent. Ges. viii, pp. 236-238.

Eurycorypha ornatipes, p. 260, *canaliculata*, p. 261, W. Africa, KARSCH, Ent. Nachr. xvi, n. spp.

Gryllacris barombica, W. Africa, KARSCH, Ent. Nachr. xvi, p. 368, n. sp.

↓ *Habrocomes*, n. g. (*Pseudophyllidæ*) : KARSCH, Ent. Nachr. xvi, p. 275.

↓ *Hectoria*, n. g., near *Phaneroptera* and *Phylloptera*, p. 21, for *H. pontoni*, n. sp., S. Australia, p. 22 ; TEPPER, Tr. R. Soc. S. Austr. xii.

↓ *Ivensia*, n. g., near *Pardalota*, for *I. uncinata*, n. sp., Quango ; BOLIVAR, p. 218, J. Sci. Lisb. (2) i.

↓ *Lagarodes*, n. g. (*Pseudophyllidæ*) ; KARSCH, Ent. Nachr. xvi, p. 272.

↓ *Lanista*, n. g., for *Conocephalus annulicornis*, Wlk. ; BOLIVAR, p. 223, J. Sci. Lisb. (2) i.

↓ *Lichenochrus*, n. g. (*Pseudophyllidæ*, near *Pleminia*), p. 268, for *L. crassipes*, n. sp., W. Africa, p. 269 ; KARSCH, Ent. Nachr. xvi.

↓ *Liocentrum*, n. g. (*Pseudophyllidæ*) ; KARSCH, Ent. Nachr. xvi, p. 272 (no species).

↓ *Mataeus*, n. g. (*Pseudophyllidæ*, near *Mustius*), p. 264, for *M. granulicollis*, n. sp., W. Africa, p. 265 ; KARSCH, Ent. Nachr. xvi.

Megalodon blanchardi, Borneo, BROGNIART, p. clxxiii, Bull. Soc. Ent. Fr. 1890 ; described and figured, Le Nat. xii, p. 287 : n. sp.

Mimetica simoni, Venezuela, BOLIVAR, p. 142, Ann. Soc. Ent. Fr. (6) x, n. sp.

Mimnermus cephalotes, Africa, BOLIVAR, p. 228, J. Sci. Lisb. (2) i, n. sp.

↓ *Morgenia*, n. g. (*Phaneropteridæ*), p. 261, for *M. hamuligera*, n. sp., W. Africa, p. 263, figs. 3 & 4 ; KARSCH, Ent. Nachr. xvi.

↓ *Mormotus*, n. g. (*Pseudophyllidæ*, near *Meronicidius*), p. 269, for *M. nigri-spinosus*, n. sp., W. Africa, p. 270 ; KARSCH, Ent. Nachr. xvi.

Morsimus serraticollis, Waigiou, BOLIVAR, p. 325, An. Soc. Esp. xix, n. sp.

Mustius bocagei, Africa, BOLIVAR, p. 221, J. Sci. Lisb. (2) i, n. sp.

↓ *Nastonotus*, n. g., near *Cocconotus*, p. 143, for *N. tarsatus*, n. sp., Venezuela, p. 144 ; BOLIVAR, Ann. Soc. Ent. Fr. (6) x.

↓ *Opisthodierus*, n. g. (*Pseudophyllidæ*) ; KARSCH, Ent. Nachr. xvi, p. 272.

↓ *Pantecphylus*, n. g. (*Pseudophyllidæ*) ; KARSCH, Ent. Nachr. xvi, p. 274.

Plangia nebulosa, n. sp., W. Africa, KARSCH, Ent. Nachr. xvi, p. 366, n. sp.

- Platygleis bonneti*, Japan, BOLIVAR, p. 326, An. Soc. Esp. xix, n. sp.
- Pæcilimon* sp., notes on; RODZIANKO, Trudui Kharkoff Univ. xxii, pp. 260, &c.
- ✓ *Polyglochis*, n. g. (*Pseudophyllidæ*); KARSCH, Ent. Nachr. xvi, p. 275.
- Pomatonota dregii*, Burm., = (*Stilpnothorax loricatus*, Pict.); KARSCH, Ent. Nachr. xvi, p. 59.
- Poreuomena africana*, ♀ noticed; KARSCH, Ent. Nachr. xvi, p. 262.
- P. tenuipes*, W. Africa, KARSCH, Ent. Nachr. xvi, p. 363, n. sp.
- ✓ *Preussia*, n. g. (*Preussia*), near *Symmetropleura*, p. 364, for *P. lobatipes*, n. sp., W. Africa, p. 365, fig. 4; KARSCH, Ent. Nachr. xvi.
- Pseudophyllidæ*, table of the characters of the African genera; KARSCH, Ent. Nachr. xvi, pp. 271-276.
- Pyrgocorypha hastata*, Africa?, BOLIVAR, p. 222, J. Sci. Lisb. (2) i, n. sp.
- Rhaphidophora baeri*, Manilla, BOLIVAR, p. 328, An. Soc. Esp. xix, n. sp.
- Saga serrata*, absence of males in; RODZIANKO, Rev. Sci. Nat. Pet. i, pp. 317-320.
- ✓ *Stenampyx*, n. g. (*Pseudophyllidæ*); KARSCH, Ent. Nachr. xvi, p. 273.
- ✓ *Tetraconcha*, n. g. (*Phaneropterides*, near *Otiaphysa*), p. 61, for *T. fenestrata*, n. sp., Cameroons, p. 62; KARSCH, Ent. Nachr. xvi.
- ✓ *T. stichyrata*, W. Africa, KARSCH, Ent. Nachr. xvi, p. 360, fig. 3, n. sp.
- ✓ *Tomias*, n. g. (*Pseudophyllidæ*); KARSCH, Ent. Nachr. xvi, p. 272.
- ✓ *Tovaria*, n. subg. of *Typophyllum*; BOLIVAR, p. 141, Ann. Soc. Ent. Fr. (6) x.
- Typophyllum* (*Tovaria*) *chlorophyllum*, *siccifolium*, p. 139, *T. geminum*, p. 140, *cinnamum*, p. 141, Venezuela, BOLIVAR, Ann. Soc. Ent. Fr. (6) x, n. spp.
- Zeuneria*, structure and systematic position discussed; KARSCH, Ent. Nachr. xvi, p. 60.
- Xiphidium ensiferum*, oviposition and embryology; WHEELER, Ins. Life, ii, p. 222.

ACRIDIIDÆ.

Bibliographic revision of the genera proposed previous to 1840; KIRBY, P. R. Dubl. Soc. vi, pp. 586-593.

Note on the stridulating area of the male and the marginal line of the female; HAUJ, Wien. ent. Z. ix, p. 18.

Fossil *Acridiidae*; SCUDDER (754).

✓ *Acmophyllum*, n. g. (*Cladonotæ*, near *Xerophyllum*), p. 21, for *A. undulatum*, n. sp., W. Africa, p. 22; KARSCH, Ent. Nachr. xvi.

Acridium prasinum, W. Africa, BOLIVAR, J. Sci. Lisb. (2) i, p. 160, n. sp.

✓ *Acridoderes*, n. g., near *Coptacra*, for *A. crassus*, n. sp., W. Africa; BOLIVAR, p. 163, J. Sci. Lisb. (2) i.

✓ *Acrocara*, n. g., p. 436, for *Pedioscirtetes pulchella*, Bruner, and *A. maculipenne*, n. sp., Mexico, p. 437; SCUDDER, Psyche, v.

Acrolophitinae, new group of *Truxalidæ*; SCUDDER, p. 432, Psyche, v.

Acrolophitus, Thom., recharacterised; SCUDDER, p. 435, Psyche, v.

✓ *Anchotatus*, n. g., *Proscopides*, p. 110, for *A. peruvianus*, fig. 8, *subapterus*, n. spp., Upp. Amazons, p. 111 ; BRUNNER, Verh. z.-b. Wien, xl.

Anthermus violaceus, p. 156, *grammicus*, *cephalicus*, p. 157, *vittatus*, p. 158, Portuguese Africa, BOLIVAR, J. Sci. Lisb. (2) i, n. spp.

✓ *Apioscelis*, n. g., *Proscopides*, p. 99, for *A. gracilis*, p. 99, fig. 3, *verrucosa*, Upp. Amazons, *columbica*, Colombia, p. 100, *compacta*, Santa Fé de Bogota, p. 101, n. spp. ; BRUNNER, Verh. z.-b. Wien, xl.

Arcyptera carvalhoi, E. Africa, BOLIVAR, p. 316, An. Soc. Esp. xix, n. sp.

Astroma compactum, fig. 12, p. 120, *granulosum*, *foliatum*, p. 121, Chili, BRUNNER, Verh. z.-b. Wien, xl, n. spp.

✓ *Bocagella*, n. g., p. 161, near *Teratodes* and *Coptacra*, for *B. lanuginosa*, n. sp., W. Africa ; BOLIVAR, J. Sci. Lisb. (2) i.

Bolivarella acuminata, W. Africa, BOLIVAR, J. Sci. Lisb. (2) i, p. 155, n. sp.

Caloptenus obesus, *cicatricosus*, p. 170, *vittatus*, *nigrovariegatus*, p. 171, *calcaratus*, *angusticeps*, p. 172, Trop. Africa, BOLIVAR, J. Sci. Lisb. (2) i, n. spp.

Camoensia insignis, characters of ♂ ; BOLIVAR, J. Sci. Lisb. (2) i, p. 153.

✓ *Cataloipus*, n. subg. of *Euprepocnemis*, for *E. (C.) oberthuri*, n. sp., Centr. Africa, pl. i, fig. 9 ; BOLIVAR, p. 321, An. Soc. Esp. xix.

Catantops digitatus, *cephalotes*, W. Africa, BOLIVAR, p. 166, J. Sci. Lisb. (2) i, n. spp.

Cephalocoema multispinosa, Porto Allegre, p. 116, *teretiuscula*, Matto Grosso, p. 117, *lineata*, Mendoza, fig. 11, p. 118, BRUNNER, Verh. z.-b. Wien, xl, n. spp.

Choroetypus curtithorax, W. Africa, KARSCH, Ent. Nachr. xvi, p. 258, n. sp.

Chrotogonus blanchardi, Egypt, KRAUSS, Verh. z.-b. Wien, xl, p. 257 ; figured in Savigny Desc. de l'Égypte Orthopt. pl. vi, fig. 2, : n. sp.

✓ *Comacris*, n. g., near *Duronia*, p. 312, for *C. sansibaricus*, n. sp., E. Africa, p. 313, BOLIVAR, An. Soc. Esp. xix.

✓ *Compsacris*, n. g., near *Orphula*, p. 314, for *C. pulcher*, n. sp., Peru, p. 315 ; BOLIVAR, An. Soc. Esp. xix.

Coptacra annulipes, Philippines, BOLIVAR, An. Soc. Esp. xix, p. 320, n. sp.

Coptotettix annulipes, W. Africa, KARSCH, Ent. Nachr. xvi, p. 25, n. sp.

✓ *Corynorhynchus*, n. g., p. 101, for *Proscopia radula* and *hispida*, *spinosus*, Kl., and *C. hispidulus*, *latirostris*, n. spp., Bahia, p. 103 ; BRUNNER, Verh. z.-b. Wien, xl.

Coscineuta cicatricosa, Amazons, BOLIVAR, p. 323, An. Soc. Esp. xix, n. sp.

Dissosteira (Edipoda) carolina, habits ; TOWNSEND, P. E. Soc. Wash. i, p. 266.

Duronia fracta, p. 260, *savignyi*, p. 259, and figured in Savigny Desc. de l'Égypte Orthopt. pl. vi, fig. 9, 1, Egypt, KRAUSS, Verh. z.-b. Wien, xl, p. 259 ; *D. virgula*, p. 310, *gerstaeckerii*, p. 311, *tricarinata*, p. 312, W. Africa, BOLIVAR, An. Soc. Esp. xix : n. spp.

Elæochlora fruhstorferi, Santa Catharina, BOLIVAR, p. 318, An. Soc. Esp. xix, n. sp.

† *Epigrypa*, n. g., *Proscopides*, for *E. variegata*, Santa Fé de Bogota, p. 112, *curvicollis*, Guayaquil, p. 113, fig. 9A, B, n. spp.; BRUNNER, Verh. z.-b. Wien, xl.

† *Epistaurus*, n. g., near *Coptacra*, for *E. crucigerus*, *signatus*, n. spp., W. Africa, BOLIVAR, J. Sci. Lisb. (2) i, p. 164.

Euryphymus adpersus, E. Africa, BOLIVAR, p. 320, pl. i, fig. 8, An. Soc. Esp. xix; *E. brachypterus*, p. 167, *sigmoidalis*, *eremobioides*, p. 168, *tricostatus*, *stolidus*, p. 169, Trop. Africa, *id.* J. Sci. Lisb. (2) i : n. spp.

Gonyacantha lanceolata, Trop. Africa, BOLIVAR, J. Sci. Lisb. (2) i, p. 215, n. sp.

† *Gymnes*, n. g. (*Acrolophitinae*), for *G. punctatus*, n. sp., California; SCUDDER, p. 440, Psyche, v.

Gymnbothrus oberthuri, Unyanyembe, BOLIVAR, p. 315, An. Soc. Esp. xix, n. sp.

Heteropternis? *savignyi*, Egypt, KRAUSS, Verh. z.-b. Wien, xl, p. 262, figured in Savigny Desc. de l'Égypte Orthopt. pl. vi, fig. 16, 1, n. sp.

Hippacris picticornis, Upper Amazons, SCUDDER, p. 441, Psyche, v, n. sp.

† *Hippodes*, n. g. (*Cladonotæ*, near *Diotarus*, Stål), for *H. vicarius*, n. sp., W. Africa; KARSCH, Ent. Nachr. xvi, p. 24.

Hypsæus æqualis, W. Africa, KARSCH, Ent. Nachr. xvi, p. 257, n. sp.

Ischnacrida montei, p. 214, *kraussii*, p. 215, Trop. Africa, BOLIVAR, J. Sci. Lisb. (2) i, n. spp.

Mastusia spectabilis, Amazons, BOLIVAR, p. 325, An. Soc. Esp. xix, n. sp.

Mesops filum, Trop. Africa, BOLIVAR, J. Sci. Lisb. (2) 1, p. 216, n. sp.

† *Odontomelus*, n. g., for *Opomala brachyptera*, Gerst.; BOLIVAR, p. 309, An. Soc. Esp. xix.

Pantelia (sub *Cladonotus*) *horrenda*, Wlk., = (*crisulata*, Bol.); KARSCH, Ent. Nachr. xvi, p. 27.

P. uncinata, Trop. Africa, BOLIVAR, J. Sci. Lisb. (2) i, p. 217, n. sp.

Parasphena nigropicta, W. Africa, BOLIVAR, J. Sci. Lisb. (2) i, p. 150, n. sp.

Paratettix simoni, Venezuela, BOLIVAR, Ann. Soc. Ent. Fr. (6) x, p. 138, n. sp.

Pedioscirtetes, Th., characters of; SCUDDER, p. 438, Psyche, v.

† *Peruvia*, n. g., for *Machærocera nigromarginata*, Sc.; SCUDDER, p. 439, Psyche, v.

Pezotettix fauriei, Japan, BOLIVAR, p. 322, An. Soc. Esp. xix, n. sp.

Phleoba lutea, Madagascar, BOLIVAR, p. 310, An. Soc. Esp. xix, n. sp.

Phlaeonotus humilis, Gerst., and *Tettix jugata*, Wlk., noticed; KARSCH, Ent. Nachr. xvi, p. 26.

Prionacris cærulescens, Amazons, BOLIVAR, p. 319, An. Soc. Esp. xix, n. sp.

↓ *Prosarthria*, n. g., *Proscopides*, for *P. teretirostris*, n. sp., S. America, pl. iii, fig. 1; BRUNNER, p. 93, Verh. z.-b. Wien, xl.

Proscopides, monograph of, with 8 new genera; BRUNNER, Verh. z.-b. Wien, xl, pp. 87, &c.

Proscopia latirostris, *ingens*, p. 96, *soror*, *pyramidalis*, p. 98, Upp. Amazons, BRUNNER, Verh. z.-b. Wien, xl, n. spp.

Stauronotus maroccanus, metamorphosis; KÜNCKEL, C.R. cx, p. 657: mode of escape from egg-case; KÜNCKEL, Bull. Soc. Ent. Fr. (6) x, p. xxxvii: habits; SAJÓ, Term. Közl. xxii, pp. 225-256.

Stenocrobylus fumosus, Angola, BOLIVAR, J. Sci. Lisb. (2) i, p. 166, n. sp.

Stetheophyma doriani, Tennessee, GODING, Ent. Am. vi, p. 13, n. sp.

↓ *Stiphra*, n. g., p. 107, for *Proscopia gibbosa*, Guer., and *lobata*, fig. 6, *tuberculata*, n. spp., Brazil, p. 108; BRUNNER, Verh. z.-b. Wien, xl.

↓ *Sygrus*, n. g., near *Pamphagus*, for *S. sepositus*, n. sp., Angola, BOLIVAR, J. Sci. Lisb. (2) i, p. 156.

↓ *Taxiarchus*, n. g., *Proscopides*, p. 109, for *T. superbus*, n. sp., Upper Amazons, p. 110, fig. 7; BRUNNER, Verh. z.-b. Wien, xl.

↓ *Tetanorhynchus*, n. g., p. 104, for *Proscopia punctata*, Kl., and the following new species:—*sublaevis*, p. 105, fig. 5, *propinquus*, *incertus*, p. 106, *longirostris*, Brazil, *angustirostris*, Argentine Rep., p. 107; BRUNNER, Verh. z.-b. Wien, xl.

Tetralania nitidula, Amazons, BOLIVAR, p. 324, An. Soc. Esp. xix, n. sp.

Tettix bipunctata, notes on; RODZIANKO, Trudui Kharkoff Univ. xxii, pp. 257, &c.

↓ *Toxopterus*, n. g., near *Orphula* and *Gomphocerus*, p. 313, for *T. miniatus*, n. sp., Peru, p. 314; BOLIVAR, An. Soc. Esp. xix.

Tristria discoidalis, p. 212, *angolensis*, p. 213, Trop. Africa, BOLIVAR, J. Sci. Lisb. (2) i, n. spp.

Tropidonotus laufferi, Peru, BOLIVAR, An. Soc. Esp. xix, p. 317, n. sp.

↓ *Trypophyllum*, n. g. (*Cladonotæ*, near *Xerophyllum*), p. 22, for *T. glabri-frons*, n. sp., W. Africa, p. 23; KARSCH, Ent. Nachr. xvi.

Xerophyllum, Bol., and *X. fuscum*, Bol., discussed; KARSCH, Ent. Nachr. xvi, p. 19.

X. galeatum, W. Africa, KARSCH, Ent. Nachr. xvi, p. 20, n. sp.

Xiphocera saussurei, Quango, BOLIVAR, J. Sci. Lisb. (2) i, p. 153, n. sp.

ECHINODERMATA.

BY

E. A. MINCHIN.

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I.—INTRODUCTION.

THE number of papers this year is somewhat large, and there are amongst them some important additions to our knowledge of Echinoderms. In morphology the most important contributions are those of CUÉNOT (1, 2) and STÜRTZ; besides which must be mentioned the observations of CARPENTER (2) on the *Cystidea*, BELL (1) on the anatomy of *Phormosoma*, and FEWKES (3) on the brachial skeleton of starfish. In the sole embryological paper of the year, SEMON (1) corrects his former statements as to the origin of the preoral ciliated band of the *Bipinnaria* larva. CUÉNOT (1) gives a number of physiological facts, while LUDWIG (2) decides the much disputed question of the currents through the stone canal and madreporite. Very interesting observations as to the habits and mode of life of Echinoderms are to be found in the works of CUÉNOT (1), FEWKES (2), and PROUHO (1, 2). The principal systematic works are those of COTTEAU, LAMPERT, SCHLUMBERGER, and STÜRTZ. Perhaps the most interesting novelty is the new living stalked Crinoid, belonging to the family *Apiocrinidae*, described by AGASSIZ. In palæontology must be mentioned the works of BATHER, COTTEAU, GAUDRY, SCHLUMBERGER, SENNES, and STÜRTZ.

CUÉNOT (1) describes in a very detailed manner the anatomy and histology of *Asteroidea*, and his statements as to the blood-vascular system are specially noteworthy, as giving a very different conception from that given by the well-known works of Ludwig and Hamann. Of considerable morphological and phylogenetic, as well as systematic and palæontological interest, is STÜRTZ's new group of the *Ophioencrinasteria*, as also many of his discoveries in the anatomy of palæozoic Asteroids and Ophiuroids. Thus his statement, that in all palæozoic Ophiuroids oral shields are wanting, would, if found universally true, be

not without bearing on the question whether these oral shields are homologous with the oral plates of Crinoids, as often supposed.

Finally, attention must be drawn to the statement of CUÉNOT (2) as to the existence of an antambulacral nervous system in other Echinoderms besides Crinoids.

II.—LIST OF PUBLICATIONS.*

AGASSIZ, ALEX. (1) Notice of *Calamocrinus diomedææ*, a new stalked Crinoid from the Galapagos, dredged by the U. S. Fish Commission Steamer 'Albatross,' Lieut.-Commander G. L. Tanner, U. S. N., Commanding. Bull. Mus. C. Z. xx, No. 6 (Dec. 1890), pp. 165-167.

*——. (2) Ueber einen neuen Tiefsee-Crinoiden aus der Familie der Apiocriniden. JB. Mineral. (1890), Bd. I, Heft i, pp. 94 & 95.

Calamocrinus diomedææ.

ANON. U. S. Fish Commission. *Anthozoa and Echinodermata* of the Gulf Stream Slope of the New England Coast. Am. Nat. xxiv, No. 278 (Feb., 1890), pp. 183-186.

BATESON, WILLIAM. On some Cases of Abnormal Repetition of Parts in Animals. P. Z. S. 1890, pt. iii, pp. 579-588 (4 woodcuts). [Abstr. in J. R. Micr. Soc. 1890, pt. 6, No. 79, p. 704.]

An abnormal *Antedon rosacea*, pp. 584-586, figs. 4a & b; a description of it by Dr. P. H. CARPENTER, pp. 584-586. [*Vide infra*, Anatomy, &c.]

BATHER, F. A. (1) British Fossil Crinoids. I. & II. Ann. N. H. (6) v (1890), pp. 307-334, 373-388, 485, & 486, pls. xiv & xv. [Abstr. in J. R. Micr. Soc. 1890, pt. 3, No. 76, p. 334.]

I. Historical introduction. II. Classification of the *Inadunata Fistulata*. Terminology, pp. 312-315. Differential characters, pp. 315-331 & 373-376. Principles of classification, pp. 376 & 377. Geological history, pp. 377-382, with a table of the distribution of the *Fistulata*. Classification: a genealogical tree, followed by a classification of the *Fistulata*. Corrigenda, pp. 485 & 486 [*vide infra*, Systematic].

——. (2) British Fossil Crinoids. III. *Thenarocrinus callipygus*, n. g. & sp., Wenlock Limestone. Ann. N. H. (6) vi (1890), pp. 222-235, pl. x.

——. (3) The Natural History of the *Crinoidea*. Proc. London Amateur Sci. Soc. i, Nos. 1 & 2, July, 1890, pp. 32 & 33.

An account of their habits and relations to their environment (abstract).

BELL, F. J. (1) Report of a Deep-Sea Trawling Cruise off the S.W. Coast of Ireland, under the direction of the Rev. W. Spotswood Green, M.A., F.R.G.S. *Echinodermata*. Ann. N. H. (6) iv (1889), pp. 432-445, pls. xviii & xix. [Abstr. in J. R. Micr. Soc. 1890, pt. 1, No. 74, pp. 44 & 45.]

Antedon phalangium, J. Müller, from 250 fath. *Astropecten irregularis*,

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

Penn, from 250, 500, and 1000 fath. *Astrogonium greeni*, n. sp., from 1000 fath. *Asterias rubens*, L., from 100 fath. *Phormosoma placenta*, Wyv.-Th., from 1000 fath. *Holothuria aspera*, n. sp., from 1000 fath. [*Vide infra*, Anatomy and Systematic.]

[BELL, F. J.] (2) Notes on the Echinoderms collected by Mr. Bourne in Deep Water off the South-West of Ireland, in H.M.S. 'Research.' J. Mar. Biol. Ass. (n.s.) i, No. 3, pp. 324-327. [Abstr. in J. R. Micr. Soc. 1890, pt. 4, No. 77, p. 464.]

Stichaster roseus, O. F. M., from 200 fath. *Asterias rubens*, L., from 200 fath. *Asterias glacialis*, O. F. M., from 90 fath. *Spatangus purpureus*, O. F. M., from 200, 400, 217, 90, & 70 fath. Note appended by BOURNE on *Pentagonaster subspinosus*, Perrier, = *Nymphaster protentus*, Sladen, with description by SLADEN.

— (3) Is *Asterias tenuispina* a British Species? Ann. N. H. (6) vi (1890), pp. 424, *et seq.*

[*Vide sub* NORMAN.]

— (4) On the Generic Name of *Asterias sanguinolenta*, O. F. Müller. T. c. pp. 472, *et seq.*

Commonly called *Cribella*; called *Linckia* by Agassiz. *Henricia*, Gray, has the priority, and the name *Cribella* must be dropped.

Lo BIANCO, S. Metodi usati nella Stazione Zoologica per la Conservazione degli Animali Marini. MT. z. Stat. Neap. ix, Heft iii, pp. 435, *et seq.*

Echinoderms, p. 458. Abstr. by PLAYFAIR McMURRICH, in Am. Nat. xxiv, No. 285 (Sept., 1890), pp. 856-865; Echinoderms, p. 862.

BOURNE, G. C. Note on Three Specimens of Asterids. See BELL (2).

BROAN, R. Exhibit of *Rotula rumphii*, from Sierra Leone. P. N. H. Soc. Glasg. ii (n.s.), pt. 2, 1890, p. xxxiv.

CAMERANO, LOZ. Osservazioni intorno al Dimorfismo Sessuale degli Echinodermi. Boll. Mus. Zool. Anat. Comp. Torino, v, No. 91.

CARPENTER, P. H. (1) On Certain Points in the Anatomical Nomenclature of Echinoderms. Ann. N. H. (6) vi (1890), pp. 1, *et seq.* [Abstr. in J. R. Micr. Soc. 1890, pt. 5, No. 78, p. 610.]

The points discussed are: (1) the use of the word "water tube," which should be used for the rudiment of the stone canal in the larva; (2) centrodorsal and dorsocentral; (3) basals and under-basals—the "parasals" of dicyclic Crinoids are the true basals, the plates below the radials are the under-basals, or "infrabasals" (Zittel); (4) radial plates—the plates called second and third radials in Crinoids belong really to the arms; (5) the use of the term "axillary"; (6) interambulacral and adambulacral.

— (2) Notes on the Morphology and Anatomy of the *Cystidea*. Rep. Brit. Ass. 1890, p. 821.

[*Vide infra*, Anatomy, &c.]

[CARPENTER, P. H.] (3) *Comatulæ* of Mergui Archipelago. J. R. Micr. Soc. 1890, pt. 1, No. 74, p. 45. [Abstr. of paper in J. L. S. xxi (1889), pp. 304-316, 2 pls.]

——. (4) Description of Abnormal *Antedon rosacea*. See BATESON.

——. (5) The Early Stages in the Development of *Antedon rosacea*. J. wiss. Mikr. vii, 1890, p. 499.

An account of the methods used by Bury in preserving *Antedon* larvæ, as published in his paper in the Phil. Tr. clxxix. (Wrongly attributed to Dr. P. H. Carpenter.)

COTTEAU, G. (1) Description de trois Echinides vivants recueillis par le Dr. J. Julien sur les Côtes de Guinée (Libéria). Congrès International de Zoologie; Comptes Rendus des Séances, Paris, 1889, pp. 281-292, pls. ii-v.

Rhabdobrissus julieni, n. g. & sp., from Cape Palmas, 20 mètres. *Schizaster edwardsi*, n. sp., Port Victoria, Cape Palmas. *Echinolampas blanchardi*, n. sp., Garraway, Cape Palmas.

——. (2) Sur les Echinides cretacés du Mexique. C.R. cx, No. 12 (24 Mars, 1891), p. 621.

6 species, 3 as yet peculiar to Mexico, and 2 new [*vide* COTTEAU (4)].

——. (3) Echinides recueillis dans la province d'Aragon (Espagne) par M. Maurice Gourdon. Bull. Soc. Géol. xviii (1890) No. 3, pp. 178-182.

32 species of 22 genera. 6 species from the Cretaceous, 2 of them new (*Micraster gourdoni*; *Coraster margaritæ*); 26 from the Eocene, 5 new (*Maretia aragonensis*, *Holcopneustes gourdoni*, *Cyclaster gourdoni*, *Leiosoma gourdoni*, *Micropsis frossardi*).

——. (4) Notes sur quelques Echinides du terrain Cretacé du Mexique. T. c. pp. 292-299, pls. i & ii.

2 new species described [*vide infra*, Systematic].

CUÉNOT, L. (1) Contributions à l'Étude Anatomique des Asterides. Arch. Z. expér. v bis, suppl. (1887-1890), Mém. ii.

[*Vide infra*, Anatomy, &c., Physiology and Biology.]

——. (2) Le Système Nerveux Enterocœlien des Echinodermes. C.R. cxi, No. 22 (1^{er} Decembre, 1890), p. 836.

[*Vide infra*, Anatomy, &c.]

——. (3) Sur le Systeme Madreporique des Echinodermes. Zool. Anz. xiii (1890), No. 337, pp. 315-318.

Replies to Hartog's complaints of misquotation, &c., and gives reasons against considering the madreporic system as a left nephridium. [*Vide infra* Anatomy, &c.; *vide* also LUDWIG (2).] [Abstr. in J. R. Micr. Soc. 1890, pt. 5, No. 78, p. 611.]

DALLA TORRE, v. Fauna von Helgoland. Zool. Jahrb. Suppl.-Heft ii, 1889.

Gives a list of Echinoids, Asterooids, and Ophiuroids occurring there.

DUNCAN, P. M. Revision of Genera and Great Groups of *Echinoidea*. J. R. Micr. Soc. 1890, pt. 2, No. 75, p. 188. [Abstr. of paper in J. L. S. xxiii (1889) pp. 1-311.]

DUNCAN, P. M., & SLADEN, W. PERCY. *Echinoidea* of Mergui Archipelago. J. R. Micr. Soc. 1890, pt. 1, No. 74, p. 45. [Abstr. of paper in J. L. S. xxi (1889) pp. 316-319.]

FEWKES, J. W. (1) On a New Parasite of *Amphiura squamata*. P. Bost. Soc. xxiv, pp. 31-33.

[*Vide infra*, Biology.]

— (2) On Excavations made by Sea Urchins. Am. Nat. xxiv, No. 277 (Jan., 1890) pp. 1-21, pls. i & ii. [An abstract by W. C. M. in Ann. N. H. (6) v (1890), p. 416; also in J. R. Micr. Soc. 1890, pt. 3, No. 76, p. 336.]

[*Vide infra*, Biology.]

— (3) On the Serial Relationship of the Ambulacral and Adambulacral Calcareous Plates of the Starfishes. P. Bost. Soc. xxiv, pp. 96-117, with 1 fig.

[*Vide infra*, Anatomy, &c.]

FILHOL, H. Des Liens qui rattachent la Zoologie à la Paléontologie. Congrès International de Zoologie; Comptes Rendus des Séances, Paris, 1889, pp. 209-224.

Discovery of recent *Echinothuridae* and their relations to fossil forms discussed (pp. 215 & 216). Questions to be solved by Palæontology (Origin of Crinoids and their relations, pp. 223 & 224).

FORSTRAND, CARL. Metoder för preparering och konservering af Hafsdjur samt några biologiska iakttagelser fram Bermudas Korallfauna. Biol. Fören. ii, Häft 8 (1890) pp. 108-111.

Occurrence of *Cidaris tribuloides*, *Echinometra subangularis*, *Hipponoë esculenta*, and *Diadema setosa* (p. 111).

*GAUDRY, —. Les Enchainements du Monde Animal dans les temps géologiques fossiles secondaires. Paris: 1890.

Echinoderms, pp. 49-74. For a *résumé*, see Arch. Z. expér. 1890, (2nd ser.), viii, pt. 2, p. xxiv (Notes and Revue, vii); for an illustrated review by M. BOULE, see Le Nat. (2nd ser.), 15th July, 1890, No. 81, pp. 165-167.

*GAUTHIER, —. Description des Echinides recueillis par M. Thomas en Tunisie. Bull. Soc. Géol. xviii (1890) No. 2, pp. 136-144.

106 species collected. 4 only below the Cenomanian, 37 belonging to the Cenomanian, 9 Turonian, 46 Senonian, 11 Eocene, and 2 Miocene. 4 new genera. [*Vide infra*, Systematic.]

GREENWOOD, M. On the Action of Nicotin upon certain Invertebrates. J. Physiol. xi (1890), pp. 573-605.

Experiments on *Asteridea*, *Ophiuridea*, and *Crinoidea*, pp. 590-597 & 604. [*Vide infra*, Physiology.]

GREGORY, J. W. *Rhynchopygus woodi*, Forbes sp., from the English Pliocene. Geol. Mag. vii (1890), pp. 300-303, 1 fig. [Abstr. in J. R. Micr. Soc. 1890, pt. 5, No. 78, p. 612.]

[*Vide infra*, Systematic.]

HARTOG, M. M. On the Madreporic Systems of Echinoderms. Zool. Anz. xiii, 1890, No. 330, pp. 136 & 137. [Abstr. in J. R. Micr. Soc. 1890, pt. 3, No. 76, p. 337.]

Complains that M. Cuénot, in his "Études Anatomiques sur les Ophiures," had first ignored, and then misquoted, his note at the British Association, at Manchester, on the madreporic system of *Echinodermata*.

HENSEN, —. Das Plankton der Östlichen Ostsee, v. Larven von Muscheln, Schnecken, Sagitten, und Wurm-larven, *Oikopleura*, und Larven von *Ophioglypha*. Ber. Komm. wiss. Unters. deutsch. Meere, vii, 2, pp. 115 & 116.

Occurrence of larva of *Ophioglypha*, p. 116.

HÉROUARD, M. E. French Holothurians. J. R. Micr. Soc. 1890, pt. 3, No. 76, pp. 335 & 336. [Abstr. of paper in Arch. Z. expér. vii, 1889, pp. 535-704, 8 pls.]

HERTWIG, O. Experimentelle Studien am tierischen Ei vor, während, und nach der Befruchtung. Jen. Z. Nat. xxiv, pp. 268, *et seq.*, taf. viii-x.

Eggs experimented on: *Strongylocentrotus lividus*, *Echinus microtuberculatus*, *Sphaerechinus granularis*, *Asterias glacialis*, and *Astropecten* sp. Chapter I. Over-ripeness of the ova, and the phenomena occasioned by it. Chapter II. Relation of the sexual products to cold. Chapter III. Staining the living cell substance with methyl blue. Chapter IV. Parthenogenesis in Starfish. [See below, Anatomy, &c.]

IVES, J. E. Echinoderms from the Northern Coast of Yucatan and the Harbour of Vera Cruz. P. Ac. Philad. 1890, pt. ii (April-September), pp. 317-340, pl. viii.

From Yucatan—*Holothuria heilprini*, n. sp., *H. silamensis*, n. sp., *H. nitida*, n. sp., *Toxopneustes variegatus*, Lam., *Echinaster braziliensis*, M. & Tr., *Luidia alternata*, Say. From Vera Cruz—*Diadema setosum*, Gray, *Echinometra subangularis*, Leske, *Mellita pentapora*, Gmelin, *Thyraster serpentarius*, M. & Tr., *Astropecten articulatus*, Say, *Ophiura cinerea*, M. & Tr., *Ophiothrix angulata*, Say. [*Vide infra*, Systematic.]

JANET, A. Note sur un *Echinocorys carinatus*, presentant neuf pores genitaux. Bull. Soc. Géol. (3) xviii, No. 2, pp. 158-160, with fig.

[*Vide infra*, Anatomy.]

JOHN, GEORG. Ueber bohrende Seeigel. Arch. f. Nat. i, Heft 3, 1889, pp. 268-302, pl. xv. [See Zool. Rec. 1889, Echinoderms, p. 7.]

Criticism and review by SIMROTH in Z. Naturw. lxiii, Heft 1 & 2, p. 224. [Abstr. in Am. Nat. xxiv, No. 279, March, 1890, p. 280.]

JULIEN, A. Resultats generaux d'une étude d'ensemble du Carbonifère marin du Plateau central. C.R. cx, No. 13, p. 736.

Archæocidaris nereï, Munst., *A. urii*, Flem., *Palæechinus gigas*, McCoy, *P. lacazei*, n. sp., *Melonites gaudryi*, n. sp.

JULIN, CH. Culture of the Larvæ of Ascidians, Worms, Echinoderms, &c. Am. Nat. xxiv, No. 288, Dec. 1890, pp. 1217 & 1218. [Extracted from a letter from Dr. Ch. Julin to Dr. Minot, dated Sept. 3rd, 1889.]

KEYES, C. R. (1) Genesis of the *Actinocrinidæ*. *Op. cit.* No. 279, March, 1890, pp. 243-254, pls. vii-ix. [Abstr. in J. R. Micr. Soc. 1890, pt. 3, No. 76, pp. 334 & 335.]

Introduction (pp. 243 & 244) ; Geological Distribution (p. 244, pl. vii) ; Greatest development in Carboniferous, but it is evident that a large proportion of the genera date further back than actual observation shows ; Elements of Classification (pp. 244 & 245) ; General Morphological Changes (pp. 245 & 246) ; Generic Considerations (pp. 246-248) ; Geologic Development (pp. 248 & 249) ; Generic Relationships (pp. 249-253) ; Summary (pp. 253 & 254). [*Vide infra*, Biology.]

— (2) Synopsis of American *Calyptræidæ*. P. Ac. Philad. 1890, pt. ii, pp. 150-181, pl. ii.

Connection between *Calyptræidæ* and *Crinoidea*, pp. 153-159, pl. ii, figs. 7, 8, 10, & 13a.

— (3) The *Echinodermata* of the Carboniferous. Am. Nat. xxiv, No. 284 (August, 1890), p. 767. [Abstr. of paper, Am. J. Sci., Sept., 1889 ; see Zool. Rec. xxvi, *Echinodermata*, p. 7.]

— (4) Review of the Progress of American Invertebrate Palæontology for the year 1889. Am. Nat. xxiv, No. 278 (Feb., 1890), pp. 131-138.

Echinoderms included.

KINGSLEY, J. S. Record of American Zoology. Am. Nat. xxiv, No. 285 (Sept., 1890), pp. 811-816, Echinoderms, p. 813 ; and *op. cit.*, No. 280 (April, 1890), pp. 351-357, Echinoderms, p. 353.

KIMPOWITSCH, L. *Dendrogaster astericola*, nov. gen. et sp., une nouvelle form des Cirripèdes Ascothoracides parasite dans la cavité du corps chez *Solaster* et *Echinaster*. Rev. Sci. Nat. publ. par la Soc. des Nat. à St. Petersburg (Owsjannikow), 1890, No. 8, pp. 353-357 & 374.

LAMBERT, J. Observations sur quelques *Hemicidaris* (suite). Bull. Soc. Géol. (3) xviii, No. 3, pp. 161-164, 3 figs.

Some specimens with the anal plates preserved.

LAMPERT, K. (1) *Holothuroidea* of the 'Gazelle.' J. R. Micr. Soc. 1890, pt. 1, No. 74, p. 46. [Notice of paper in SB. Ak. Berlin, 1889, pp. 524-526.]

*— (2) Verzeichniss der während der Reise S.M.S. 'Gazelle' gesammelten Holothuriën. Forschungsreise S.M.S. 'Gazelle,' Bd. 4, pp. 301-309.

37 species, 6 new.

LUDWIG, H. (1) Bemerkungen über einige Ceylonische Echinodermen. SB. niederrhein. Ges. (7th July, 1890), pp. 98-105.

A collection of 15 species of Echinoderms made by Dr. Driesch and Dr. Herbst, of which 6 are new to Ceylon, viz. :—*Thyone rosacea*, Semp., *Holothuria vagabunda*, Sel., *Ophiopeza fallax*, Pet., *Amphiura* sp. (juv. ?), *Ophiocnida sexradia*, Dunc., *Ophiothrix ciliaris*, M. & Tr. In addition, the collection contained some indeterminable specimens of a *Cucumaria* sp. and *Colochirus* sp. [*Vide infra*, Systematic, Anatomy, &c.]

——. (2) Ueber die Function der Madreporen platte und des Steincanals der Echinodermen. Zool. Anz. xiii (1890), No. 339, pp. 377-379. [*Vide infra*, Physiology.] [Abstr. in J. R. Micr. Soc. 1890, pt. 5, No. 78, p. 611.]

——. (3) *Echinodermata*. J. R. Micr. Soc. 1890, pt. 2, No. 75, p. 188, & pt. 5, No. 78, p. 610.

Abstract of Bronn's Klassen und Ordnungen des Thierreich's, ii, 3. *Echinodermata*, pp. 129-240, pls. vi-xii. [See Zool. Rec. xxvi, *Echinodermata*, p. 8.]

LÜTKEN, CH. Nogle temmelig uventede Forgelser af den norske Havfauna. Vid. Medd. 1889 (pub. 1890) pp. 308-362.

The additions are *Goniaster acutus*, Heller (which is identical with *G. placentaeformis*), *Gonodactylus chiragra*, &c.

MARCHAL, PAUL. L'Acide Urique et la fonction renale chez les Invertébrés. Mém. Soc. Zool. iii, pt. 1, 1889, pp. 33-87.

Sponges, Coelenterates, and Echinoderms, pp. 42 & 43. A résumé of previous researches given. No new observation on Echinoderms.

MARENZELLER, E. v. (1) Deutsche Benennungen für Poriferen, Coelenteraten, Echinodermen, und Würmer. Verh. z.-b. Wien, xl, Qrt. ii, 1890, pp. 177-184.

Echinoderms, pp. 181 & 182.

MARENZELLER, E. v. (2) & GROBBEN, C. Vorläufiger Bericht über die zoologischen Arbeiten. Anz. Ak. Wien, 1890, No. xix, pp. 207-210.

Brisinga mediterranea, Perrier, in depths from 680-1770 m. lat. 35° 56' 0" N., long. 20° 54' 50" E.

MARSHALL, A. MILNES. The Shapes and Sizes of Animals. Tr. Manch. Micr. Soc. 1889, pp. 1-24.

Discusses radial symmetry of *Echinodermata*, pp. 12-24.

MCCOY, F. *Echinodermata* of Victoria. Prodr. Zool. Vict. xx, pl. cc, pp. 371-375.

[*Vide infra*, Systematic.]

NORMAN, A. M. Is *Asterias tenuispina* a British Species? Ann. N. H. (6) vi (1890), pp. 502, et seq.

No!

*NEUMAYR, M. Ueber *Palæechinus*, *Typhlechinus*, und die Echinuriden. JB. Mineral. 1890, Bd. i, Heft 1, pp. 84-87.

PFEFFER, GEORG. Die Fauna der Insel Jeretik, Port Wladimir, an der Murman-Küste, nach den Sammlungen des Herrn Kapitän Horn. JB. Hamb. vii, 1889.

Echinoderms, p. 33.

PROUHO, H. (1) Du rôle des Pedicillaires Gemmiformes chez les Oursins. C.R. cxi, No. 1 (7th July, 1890), p. 62; Arch. Z. expér. 1890, viii, 2nd ser., No. 4, p. xlii (Notes et Revue, xiii). [Abstr. in J. R. Micr. Soc. 1890, pt. 5, No. 78, p. 611.]

[*Vide infra*, Biology.]

— (2) Du sens de l'Odorat chez les Etoiles de Mer. C.R. cx, No. 25 (June 23rd, 1890), pp. 1343-1346. [Abstr. in J. R. Micr. Soc. 1890, pt. 5, No. 78, p. 612.]

[*Vide infra*, Biology and Physiology.]

RAMSAY, E. P. (1) Report on a Zoological Collection from the Solomon Islands. Rec. Austral. Mus. i, No. 1, pp. 1-7.

1 Echinoderm, *Archaster typicus*, M. & Tr.

— (2) Specimens obtained in a dredging trip in Port Jackson, Saturday, 30th May, 1890. *Op. cit.* No. 4, pp. 84-88.

1 Crinoid (*Antedon pumila*, Bell), 5 Ophiurids, 4 Asterids, 4 Echinids, 3 Holothurians.

SABATIER, ARMAND. La Station Zoologique de Cette. Congrès International de Zoologie; Comptes Rendus des Séances, Paris, 1889, pp. 115-126.

A description of the fauna. *Strongylocentrotus lividus*, *Ophiothrix alopecurus*, *Amphiura squamata*, and *Antedon rosacea* abundant, p. 117.

SAUVAGE, H. E. De la présence du *Cribella oculata* dans le Pas-de-Calais. Bull. Soc. Z. Fr. xv, Nos. 4 & 5 (April and May, 1890), p. 198.

SCHLUMBERGER, —. Seconde Note sur les Holothuridées fossiles du Calcaire Grossier. Bull. Soc. Géol. xviii (1890), No. 3, pp. 191, *et seq.*

Corrects errors in his former note (9th March, 1888), and gives descriptions of a number of new species, together with those described in his former note. In the Eocene of Paris there are 11 species of *Apoda* and at least 14 of *Pedata*. [*Vide infra*, Systematic.]

SEMON, R. (1) Zur Morphologie der bilateralen Wimperschnüre der Echinodermenlarven. Jen. Z. Nat. xxv, Heft 1, pp. 16, *et seq.* taf. ii.

[*Vide infra*, Embryology.]

SEMON, R. (2) & LUDWIG, H. New Formation of Disc in broken arm of an Ophiurid. J. R. Micr. Soc. 1890, pt. 1, No. 74, p. 46.

Abstract of papers by SEMON in Jen. Z. Nat. xxiii (1889), pp. 585-594, 1 pl., and LUDWIG in Zool. Anz. xii (1889), pp. 454-457. [See Zool. Rec. xxvi.]

*SENNES, J. Echinides Cretacés des Pyrénées Occidentales. Sér. II. Bull. Soc. Géol. (3) xvii, No. 3, pp. 804-824, 4 pls.

7 new species; 2 new genera—*Gibbaster*, *Galeaster*.

SIMROTH, —. [*Vide* JOHN.]

SLADEN, W. P. (1) Description of *Nymphaster protentus*. [*Vide sub* BELL (2).]

— (2) *Asteroidea* of Mergui Archipelago. J. R. Micr. Soc. 1890, pt. 1, No. 74, p. 46. [Abstr. of paper in J. L. S. xxi (1889), pp. 319–330, 1 pl.]

— (3) Report on the *Asteroidea* collected by H.M.S. 'Challenger' during the years 1873–1876. Am. Nat. xxiv, No. 278 (Feb. 1890), pp. 160 & 161.

Abstract and criticism of the 'Challenger' Report, vol. xxx (1889).

SLUITER, C. PH. (1) Ueber die Entstehung der Korallenriffe in der Javasee und Brantweinbai, und über neue Korallenbildung bei Krakatau. Biol. Centralbl. ix, No. 24 (15th Feb., 1890), pp. 737–753.

Holothuria squamifera, Semper, living in the mud of the Bay of Batavia, between the two coral islands Enkhuizen and Leiden, p. 742. *Temnopleurus*, and numerous Ophiuroids and small *Synaptidae* abundant in young coral reefs, p. 742.

— (2) Die Evertebraten aus der Sammlung des königlichen naturwissenschaftlichen Vereins in Niederländischen Indien in Batavia. Tijdschr. Nederl. Ind. xlviii (1889), pp. 285–313.

A list of Echinoids and Asteroids, with the locality, depth, and nature of the surroundings in which each species lives. 3 new Asteroids. [*Vide infra*, Systematic.]

— (3) Nachträgliches über die Echinodermen-Fauna des Java-Meeress. Tijdschr. Nederl. Ind. xlix (1890), ser. 8, deel x, pp. 105–110, 1 pl.

Holothurians and Echinoids. 3 new species of the former. [*Vide infra*, Systematic.]

SOMERVILLE, ALEX. Dredging off Portincross, Ayrshire. P. N. H. Soc. Glasg. ii, (n. s.), pt. ii (1890), pp. 189–193.

Brissus lyrifer, Forbes, obtained, p. 193.

STÜRTZ, B. Neuer Beitrag zur Kenntniss paläozoischer Seesterne. Paläontogr. xxvi, Lief. 4–6 (March, 1890), pp. 203–247, taf. xxvi–xxxi.

1. Literature and Introduction (pp. 203–205). 2. Completion and Correction of Palæozoic Asterids already known (pp. 205–225). 3. Descriptions of new Asterids from Bundenbach; (a) Stellerids, (b) Ophiurids (pp. 225–233). 4. General part (pp. 233–244). [*Vide infra*, Anatomy, &c., Biology, and Systematic.]

SWAINSON, G. Among the Sea Urchins. Part I. J. Micr. & Nat. Sci. (n. s.) iii, No. 1 (Jan. 1890), pp. 9–18, pl. i, 2 woodcuts. Part II. *Op. cit.* No. 4 (Oct. 1890), pp. 260–268, pl. xviii, 3 woodcuts.

A popular article; nothing new.

TOUCAS, —. Étude de la Faune des Couches Tithoniques de l'Ardeche. Bull. Soc. Géol. xviii (1890), Nos. 7 & 8, pp. 560-629, pls. xiii & xviii.

Distribution of a number of Crinoids and Echinoids.

VOELTZKOW, A. *Entovalva mirabilis*, eine schmarotzende Muschel aus dem Darm einer Holothurie. Zool. Jahrb. v (Abth. f. Syst. Geogr. und Biol. der Thiere), Heft 4, p. 619, taf. xlii.

[*Vide infra*, Biology.]

WELSCH, —. (1) Terrains Jurassiques dans les environs de Tiaret, Freuda, et Saïda. Bull. Soc. Géol. xviii (1890), No. 6, pp. 428-440.

Distribution of a number of Echinoids and Crinoids.

—. (2) Les terrains Cretacés du Seresson occidental et de Lihon (fin). *Op. cit.* No. 7, pp. 497-510.

Distribution of a number of Echinoids.

WHITELEGGE, TH. List of the Marine and Freshwater Invertebrate Fauna of Port Jackson and the neighbourhood. J. R. Soc. N.S.W. xxiii, pt. ii (1889), pp. 163-323.

Echinoderms, pp. 197-206. [*Vide infra*, Systematic.]

III.—ANATOMY, HISTOLOGY, MORPHOLOGY, AND PHYLOGENY.

BATESON & CARPENTER describe an abnormal specimen of *Antedon rosacea*, in which two arms, after being continued normally for a certain distance, break up into several secondary arms. These two abnormal arms are symmetrically placed with regard to the mouth and anus.

BELL (1) finds that in *Phormosoma placenta*, Wyv.-Th., the organs of Stewart may be present in a rudimentary condition, or may be absent. He could find no trace of their presence in *P. bursarium* or *P. tenue*. He also finds the longitudinal muscles described by Sarasin entirely absent in *Phormosoma*, and very feebly developed in *Asthenosoma pellucidum*. He points out that these facts militate against the statements which the Sarasins based on the anatomy of *Asthenosoma urens*, as to the characteristics of the *Echinothuridae*.

CAMERANO has observations on sexual dimorphism in Echinoderms.

According to CARPENTER (2), in many Cystids the plates of the calyx are as regular as in Crinoids. Many forms are dicyclic and hexamerous. *Echinoencrinus* has infrabasals, basals, radials, and interradials, which are perhaps homologous with the deltoids of Blastoids. In some genera the mouth is protected by five oral plates, that on the anal side being the largest, as in many Palæocrinoids. The "hydrophores palmés" of Barrande were rightly interpreted by Noumayr as the remains of subtegmina ambulacra, and they were not at the dorsal pole. Where there was no genital pore the anus may have subserved genital functions. Many armoured forms of *Psolida* (Holothurians) have much

resemblance to *Cystidea*. The fourth opening near the peristome of *Aristocystites*, may have been nephridial, as perhaps also, on account of its position, the third opening in *Echinoencrinurus*.

CUÉNOT (1) describes the anatomy and histology of the Asterids. Connective tissue (pp. 3-5). Calcareous tissue (p. 6). Muscle fibres (p. 6): never striated in any way, and never in communication with the cells of the ectoderm, as Hamann supposed. Yellow bodies (p. 7), probably vegetable cells, occur commonly in sections, especially of the ovoid gland. Integument (pp. 7, *et seq.*) with three layers: peritoneal epithelium (innermost layer) (p. 8); external epithelium (outermost layer) (pp. 8, *et seq.*) consists of indifferent cells, with two kinds of glandular cells, mucous cells, and "cellules mûrifformes." Colours of starfish due to a pigment contained in the cells of the ectoderm. Between the bases of the ectoderm cells is a fibrous layer, the superficial nerve plexus. Fibrous dermis (middle layer) (p. 11). Between the dermis and the peritoneal epithelium is a muscular layer. In *Echinaster sepositus* there are true dermal glands (pp. 11, *et seq.*), the secretion of which is similar to that of the "cellules mûrifformes." Skeleton and musculature (pp. 13 & 14); the name, "soutien interradiaire," is proposed for the plate termed odontophore by Viguiet. Lymphatic gills (pp. 14 & 17): the circular lacune at the base is not a portion of the "schizocœle" (Hamann), but is a closed space. Vibratile radioles (p. 17): these are cylindrical rods, supported by a calcareous network in the interior, and covered by columnar ciliated epithelium; they occur on the lateral faces of the marginal plates in *Luidia* and *Astropecten*. Pedicellariæ (pp. 18, *et seq.*): *Luidia ciliaris* has both tridactyle and didactyle forms; the former in specimens from Roscoff, the latter in specimens from Banyuls. *Asterina gibbosa* has pedicellariæ scarcely differentiated from groups of spines, showing that there is no absolute distinction between these two kind of organs. The pedicellariæ of *Asterias glacialis* are then described in detail: (1) "Cross" pedicellariæ (pp. 20-22); (2) "Straight" pedicellariæ (pp. 22 & 23); (3) Tridactyle pedicellariæ (p. 23). In the development of the pedicellariæ (p. 24) the valves appear first, then the basal piece; the "cross" pedicellariæ run through a transitory "straight" stage. Digestive tract (pp. 31, *et seq.*): there are two kinds of glandular cells in the epithelium—mucous and granular. Hamann's flask-shaped cells do not exist. Nervous system (pp. 44, *et seq.*): nerve-ring and cords alike formed of an epithelium with elongated filamentous cells, between which are found the nervous elements, consisting of fibres and cells. The nerve-cells are only bipolar; the multipolar cells, often described, belong to the connective tissue. Sense organs (pp. 52, *et seq.*): there is no communication between the epithelial cells and the nervous layer, as Hamann described. The tentacle at the tip of the arm is a tactile organ, and some of the tube feet nearest to it are also modified for touch. Eye (pp. 55, *et seq.*). Blood (pp. 63, *et seq.*): all the internal fluids, whether of the body cavity, blood-vascular, or water-vascular system, have the same composition. This internal medium consists of a liquid (sea water) containing sus-

pendent amoeboid corpuscles, of one kind only, which contain a substance allied to hæmoglobin, termed "hæmoxanthin" by the author. The corpuscles originate from lymphatic glands; these are the ovoid gland for the vascular system and body cavity, and Tiedemann's bodies and the Polian vesicles for the water-vascular system. All these lymphatic glands consist of a connective tissue stroma supporting cells, which multiply rapidly and wander away as amoeboid corpuscles. Ambulacral apparatus (pp. 73, *et seq.*). Tiedemann's bodies (p. 75). Polian vesicles (p. 76). Stone canal (p. 77): most of the pores of the madreporite open into the stone canal, the remainder into the peripheral cavity belonging to the blood-vascular system. Modifications of the water-vascular system in different groups (p. 78). Blood-vascular system (p. 86) (= perihæmal system of Ludwig, *vide infra*): the oral ring opens into the body cavity in each interradius. In each arm there are a radial, two marginal, and as many transverse vessels as there are feet on each side. The radial and marginal vessels send vessels to the feet. The marginal vessel also sends off a vessel opposite each tube foot, which opens into the body cavity of the arm, between the ambulacral and adambulacral pieces. The oral ring sinus and the radial sinuses are alike divided in half by a septum. In one interradius a large sinus rises from the ring sinus towards the aboral face, the "axial" or "glandular sinus," containing the stone canal and ovoid gland. The ovoid gland consists of lymphatic tissue, and has a prolongation which hangs free in the body cavity, but has no connection with the stomach, as Hamann supposed. The axial sinus communicates with the exterior by some of the madreporic tubules. Genital vascular apparatus (p. 94): in the young *Astropecten* there is, at first, no aboral blood ring. Then the axial sinus sends out on each side a prolongation containing a process from the ovoid gland—the genital rachis. These processes grow round the aboral face of the animal, forming the aboral blood ring, containing the annular genital rachis. From the ring arise in each interradius two outgrowths, into which the genital rachis is prolonged, and from the prolongations of the genital rachis sprout the ten gonads. The genital ducts arise as ingrowths of the ectoderm. The portion of the genital rachis not used to form gonads forms lymphatic tissue, like that of the ovoid gland, supplying the genital vascular apparatus with corpuscles.

All that the author describes as blood sinuses are, in Ludwig's terminology, "perihæmal spaces," and he finds that Ludwig's "blood-vascular system" has no existence as such. Ludwig's "radial blood-vessel" is a series of lymphatic spaces in the septum of the radial blood-vessel proper; his oral blood ring in the annular buccal septum does not exist; his aboral blood ring and genital vessels are lymphatic organs produced from the genital rachis.

Modifications of the blood-vascular system in different groups (pp. 100, *et seq.*). The blood-vascular system of Echinoderms is derived from the general body cavity, but is homologous with that of other Echinoderms.

Sexual Reproduction (p. 113). Gonads of different families described

(pp. 114, *et seq.*). Evolution of sexual elements (pp. 120, *et seq.*) : after the spermatozoon is set free, its nucleolus travels to the periphery, projects, and is cast out. The ovum has no follicle, and its zona radiata is secreted by its own activity. The sexual cells originate from the same primitive cells as blood corpuscles. Successive hermaphroditism in *Asterina gibbosa* (pp. 126 & 127). Asexual reproduction (p. 128) : two methods—(1) by median division, as in *Asterina vega*; (2) by radial division, as in *Linckiadae*, where the arms fall off, and each arm buds a new body, while the old body buds new arms.

The author concludes his observations by arranging the Asterids he has studied in what appears to him to be their natural order (p. 131). He finds nothing in the anatomy of Asterids to support Perrier's view that each starfish is a colony of six individuals, a central nutrient and five radial reproductive animals.

CUÉNOT (2) finds that the aboral nervous system of Crinoids is not an isolated formation, but that analogous, if not homologous, structures occur in Urchins, Ophiurids, and Asterids. In Asterids each arm is traversed on its aboral side by a strong muscular band ; these bands converge to the centre to form a star-shaped figure. Over these bands there is a great thickening, of nervous nature, of the peritoneal epithelium. The histology of these thickenings is quite similar to that of the ambulacral nervous system. No connection was found between this enterocœlic nervous system and the superficial nerve plexus. In the same category with the enterocœlic nervous system in Crinoids and Asteroids must be placed the genital nervous ring found by Prouho in *Echinus acutus* and *Strongylocentrotus lividus*, and occurring also in *Arbacia pustulosa* and *Echinodiscus biforis*. In Ophiurids there is a nerve ring placed exactly like that of Urchins, in the aboral ring which goes from the axial sinus to the genital organs. It perhaps communicates with the peripheral branches of the ectodermal nervous system, but it appears to be of mesodermic origin, developed at the base of the enterocœlic epithelium.

CUÉNOT (3) disputes Hartog's theory that the madreporic system represents a left nephridium : (1) for embryological reasons ; (2) because colouring matters injected into the body cavity do not escape by it, but by simple osmosis from the feet or lymphatic gills, and there is practically no communication between the body cavity and the exterior by the madreporite, from a physiological point of view ; (3) because the communication between the body cavity and the exterior is frequently secondarily obliterated anatomically ; and (4) because Hartog's experiments are not conclusive as to the presence of an outward current. The experiments of Perrier, Prouho, and Cuénot showed that no currents existed at all. [*Vide* LUDWIG (2).]

FEWKES (3) describes and figures a single stage in the development of *Asterina gibbosa*, slightly older than the oldest stage described by Ludwig, *Asterina* being selected as a type of the *Asterie adambulacrariae*, and also because pentagonal, and therefore nearer to the Echinoids than the stellate genera. A comparison is instituted between this form and

the mouth plates of the young *Asterias*, and it is concluded that there is no difference in the way the mouth parts of a typical representative of the group of starfishes known as *Asteriæ ambulacraræ* and *Asteriæ adambulacraræ* form in the development of the two groups, but that they are built on essentially the same plan, and the division of starfishes into those with ambulacral and those with adambulacral mouths is not found in nature. The author supposes that the arm of a starfish is made up of somites or segments, and that, typically in Echinoderms, the calcification of each somite may be thought to surround the water-tube of the arm. This theoretical ring of calcification is most closely reproduced in its typical form in the plates surrounding the mouth, in both starfish and sea urchins. The ambulacrals and adambulacrals of a starfish are portions of the annular calcification of successive somites, and are serially homologous. In the ambulacrals the external part of the somite is aborted, while in the adambulacrals both the external and internal parts are missing, only the lateral portions remaining. In sea urchins the plates corresponding to the ambulacrals of a starfish are lost, appearing only round the mouth as the auriculæ. On the other hand, plates corresponding to the adambulacrals of a starfish remain, and meet below the water-vascular system, to form the so-called ambulacrals of the sea urchin. The marginals of starfish, which are most developed in pentagonal types, become the interambulacrals.

Incidentally the author notices that *Palmipes* lays its eggs in long yellow strings (footnote, p. 102). The author passes on to discuss the primary spines of Echinoderms. In the young stages of many Echinoderms the animal is often provided with embryonic spines, relatively much larger, and of a different nature to those of the adult. Thus the young *Asterias* is provided with large spatulate spines, which the author compares to the modified fin-like spines of *Ophiopteron*, and which he believes may have been primitively swimming organs. There are two distinct kinds of spines in Asteroids, those which are simply outgrowths from a calcareous plate, and those produced from separate calcifications and afterwards articulated to a plate. To the latter category belong the embryonic spines of *Asterias*. Similar spatulate spines are found in the young *Arbacia*, which the author has frequently taken pelagic after absorption of the pluteus, though he has not actually seen it use its spines for swimming. He believes that this larval *Arbacia* represents an ancestral form (*Archiarbacia*), from which Echinoids and starfish have sprung, with a disc-like body, and marginal flappers supported by a calcareous axis, the organism resembling an *Ephyra*, except for the calcification. In many young Ophiurids, on the other hand, the embryonic spines are hooked. These spines are permanent in the adult *Ophiobranchion* and *Astrophyton*. In Ophiurids also there are two kinds of spines, the ordinary straight spines of the adambulacral side plates, and the embryonic hooked spines, both kinds movable. It is left an open question whether these embryonic hooked spines are homologous with the spatulate embryonic spines of *Asterias*.

HERTWIG describes the behaviour of the nucleus during the maturation of parthenogenetic ova of *Asterias* and *Astropecten*. After the first polar body is formed, a second nuclear spindle is formed beneath it, leading to a second division of the nucleus. Instead, however, of a second polar body being formed, the two halves of the nucleus travel to the centre of the ovum, and fuse to form a first segmentation nucleus, which soon commences to divide and the ovum to segment.

JANET describes a specimen of *Echinocorys carinatus*, in which three of the four genital plates have two pores each, the fourth plate three.

LUDWIG (1) observes that *Ophiocnida sexradia*, Dunc., can increase by transverse division like *Ophiactis virens* (Sars), Lütken.

According to STÜRTZ, the five oral shields of recent Ophiuroids are always wanting in palæozoic forms, in which respect the recent *Astrophysura permira*, Sladen, with only one oral shield present as the madreporite, is perhaps intermediate between palæozoic and recent forms. The oral angle shields, lateral oral shields, jaws, jaw-plates, and oral papillæ are normally developed in palæozoic forms, but the radial shields have never been observed in any of them. The arm skeleton of palæozoic Ophiuroids shows various stages of development:—(1) In *Ophioencrinasteriæ* the hard parts were enveloped in a soft skin; ventral and dorsal shields were wanting; the vertebræ seen from below consist of unconnected alternating halves, and the ambulacral pores are either in the vertebræ or between these and the lateral shields; (2) in *Ophiura lymani* the dorsal shields are wanting; the inner arm skeleton consists of rod-like bodies, but those of each pair are opposite to one another and fixed at the ends; (3) forms such as *Furcaster*, &c., which resemble (4), but in which ventral shields are doubtfully present; (4) palæozoic Ophiuroids similar to recent forms, but without dorsal shields; the ambulacral vertebræ are normal. Radial and oral shields wanting. The author supports Ludwig in homologizing the vertebræ of Ophiurids, and not their ventral shields, with the ambulacrals of Stellerids, since in the oldest Ophiurids the halves of the vertebræ are disconnected and often alternating, while the ventral shields are often wanting.

In several *Encrinasteriæ*, as well as in some palæozoic *Stelleridæ veræ*, the madreporite is on the ventral surface, while in other *Encrinasteriæ* it is dorsal, as in recent forms. The mouth structure of palæozoic starfish seems to be similar to that of recent forms. *Encrinasteriæ* with alternating ambulacral plates are to be distinguished from *Stelleridæ* with the ambulacral plates of each pair opposite to one another; but, apart from this peculiarity, the *Encrinasteriæ* stand as close to recent *Stelleridæ* as do the palæozoic *Stelleridæ veræ*.

The author looks upon the *Cystidea* as ancestors of the *Asteroidea*, through such forms as *Edrioaster*, *Agelacrinus*, and *Hemicystites*. He considers the third opening of many Cystids to have been perhaps that of the stone canal. If an originally spherical or oval Cystid spreads out to a flat or disc-shaped form, with the three openings on the upper side, we get a transitional form like *Agelacrinus*. At the same time the external hard

parts of the lower part of the body become replaced by a soft membrane, as the author has found to be the case in *Agelacrinus* and *Hemicystites*, by applying the method of thin sections. The author institutes a detailed comparison of the structure of his transitional Cystid genera with Asteroids, and concludes that they might be grouped either with Asteroids or Cystids. The ancestor of Asteroids was sessile.

IV.—EMBRYOLOGY.

SEMON (1) finds that the preoral band of starfish larvæ is not produced from the adoral band, as he formerly stated (*Entwicklung der Synapta digitata*; see Zool. Rec. xxv, Echinoderms, p. 8); but is nipped off from a continuous postoral band, and its connection with the adoral band is secondary: hence the preoral area in *Auricularia* and *Bipinnaria* are homologous. All Echinoderm larva have a circumoral and an adoral band of cilia. The Echinoderm *Dipleurula* cannot be compared with a Trochosphere; its circumoral ciliated band is without a homologue in other larvæ, and has been probably independently acquired.

Although the *Bipinnaria* passes through an *Auricularia* stage, no trace of the nerve streaks of the latter were found, though they are probably present.

V.—PHYSIOLOGY.

CUÉNOT (1) finds that the "cellule mûriformes" in the epidermis of Asterids secrete little vesicles, which appear to be venomous, and act as defensive organs. The dermal glands of *Echinaster sepositus* produce a similar secretion. The function of the vibratile radioles in *Luidia* and *Astropecten* is to direct currents of water to the lymphatic gills. The function of the pedicellariæ is purely defensive, to keep off parasites [*vide* Biology, *infra*]. In feeding, nutritious substances never enter the radial or stomachal cœca of starfish. The function of the anus is very limited, and waste matters are often ejected from the mouth. The granular cells of the digestive tract secrete an important digestive ferment. The stomach of a starfish is evaginated by compression of the cœlomic fluid, and drawn in again by the muscles of the mesenteries. In the nervous system of starfish, the radial cords serve each as the co-ordinating centres of their respective arms, while the oral ring acts as the co-ordinating centre for all the arms. The function of respiration is carried on by the hæmoxanthin of the blood corpuscles, acting similarly to hæmoglobin. Excretory matters pass into the body cavity and escape by osmosis through the lymphatic gills; there are no organs of excretion. The products of digestion also pass into the body cavity by osmosis; they are then probably taken up by the amœboid corpuscles and stored up in a form similar to albumen, to be distributed to the tissues. The stone canal of Asterids has no current either inwards or outwards. It appears

to be quite functionless in the adult. The Polian vesicles are lymphatic glands, and contract in order to send the blood corpuscles they produce into the water-vascular system. The blood-vascular system has no currents in definite directions, but the liquid is simply kept in motion by the cilia of the epithelium. It serves for the nutrition of the organs it traverses.

GREENWOOD describes the action of nicotin upon Asterids, Ophiurids, and Crinoids. In the two latter groups the paralyzing action of nicotin is preceded by a phase of stimulation.

LUDWIG (2) contradicts the statements of Hartog as to there being an outward current from the madreporite of Echinoderms. As the result of experiments on *Holothuria tubulosa*, *Stichopus regalis*, *Sphærechinus granulatus*, *Asterina gibbosa* and *pancerii*, *Antedon rosacea*, and on *Auricularia*, he finds that the current is always from without inwards, both in the pore canals of the madreporite, the calyx pores of *Antedon*, the dorsal pore of *Auricularia*, and in the stone canal.

PROUHO (2) finds that the sense of smell in starfishes is localized in the anterior non-locomotory tube feet of each arm, situated just behind the ocular plate. He proposes for these feet, or tentacles, the name "palps." [*Cf. Biology, infra.*]

VI.—BIOLOGY.

BATHIER (3) gives an account of the habits of Crinoids and their relation to their environment.

CUÉNOT (1) describes the method in which a starfish uses its pedicellariæ for defence. A worm falling on the skin is seized and held by them, assisted by the spines. At the same time, the glandular cells of the skin pour out their poisonous excretion. The animal is held till it is dead. There is a relation between the abundance of pedicellariæ in specimens of a given species from different localities and the richness of the fauna; and the species with pedicellariæ in the ambulacral groove never have commensal worms in this part. The most vulnerable parts of the body are the lymphatic glands; in *Astropecten* these are protected by the paxillæ, which act like the pedicellariæ in seizing animals. Another method of defence in starfish is autotomy. The author describes the method in which starfish feed (pp. 40, *et seq.*).

FEWKES (1) describes a Crustacean parasitic in the brood cavities of *Amphiura squamata*. It causes the ovaries of the *Amphiura* to degenerate into an amorphous mass, in which no ova were recognisable, and the brood cavities become filled with the eggs and young of the Crustacean.

FEWKES (2) describes the manner in which *Strongylocentrotus dröbachiensis*, on the coast of Grand Manan, makes excavations in solid rock. The excavations are effected by the teeth and spines, combined with motions of the animal produced by waves and tide. The object is primarily protection, but secondarily a sufficient amount of water is retained in this way to cover the animal at half-tide. The coralline accompanying

the urchin, generally found at the rim of the excavation, takes no part in the formation of the recess, though its presence may be necessary to the urchin. Sea-urchins appear to play some part in the formation of the pot-holes with a central style in which they are found at Biarritz, France, though they are assisted by the movements of stones under the action of tides and waves.

According to KEYES (1), the study of the *Actinocrinidæ* (for example, *Batocrinus*, *Dorycrinus*, and *Dichocrinus*) shows that at times in the phylogenetic history of a group variations appear to go on with broad and rapid strides, and the organisms survive through rapidly changing physical conditions. When the changes of environment became too rapid, the forms either ceased to exist or retrograded, and became depauperate and extinct. *Actinocrinus* and others show that variation may go on in one part without affecting another. The *Actinocrinidæ* show a tendency during their existence to increase the distal extent of the rays by branching, by lateral expansion of the arms, or by radial extension of the calyx radials.

KEYES (2) describes the relations between *Calyptræidæ* and Crinoids.

KINPOWITSCH describes a Cirripede parasitic in the body cavity of *Solaster* and *Echinaster*.

PROUHO (1) finds the function of the gemmiform pedicellariæ of urchins is to repel the attacks of starfish. When a *Strongylocentrotus lividus* is attacked by an *Asterias glacialis*, as soon as it feels the contact of the tube feet of the starfish the little spines round the part attacked lie down flat, thus unmasking the gemmiform pedicellariæ, which are seen with their jaws widely open. The moment a tube foot touches one of them it is bitten, and the bite seems to cause the starfish sharp pain, since it at once withdraws. The head of the pedicellaria remains attached to the bitten tube foot; hence, after a time the urchins are unable to keep off the starfish, if the latter continue to attack them. If the urchin is pricked with a needle, or otherwise irritated, the movements of the spines are quite different from those performed when attacked by a starfish. In the first case they are all inclined towards the point of attack.

PROUHO (2) describes a number of experiments, proving that starfish (*Asterias glacialis*) in seeking their prey are not guided at all by sight, but by the sense of smell, localized in the non-locomotory tube feet which are situated behind the ocular plate.

STÜRTZ believes that no palæozoic Ophiuroid can be referred to any recent form inhabiting the shore, and that all palæozoic forms inhabited either deep sea or moderate depths. His investigations give no support to the view that the littoral fauna is older than that of the deep sea.

VÆLTZKOW describes a parasitic bivalve occurring in a species of *Synapta*. It lives in the œsophagus, and is visible externally as a whitish grey body, which moves without changing its place. The young animals enter their host by the mouth. In addition a parasitic snail occurs in the *Synapta*, both fixed to the wall of the stomach and creeping about on the exterior.

VII.—DISTRIBUTION.

IN SPACE AND TIME.

BATHER (1) : geological distribution of Fistulate Crinoids, with a table, pp. 377-382. BELL (1, 2). COTTEAU (1, 2, 3) : Echinoids. CUÉNOT, (1) p. 134 : Asterids. V. DALLA TORRE : Echinoids, Asteroids, and Ophiuroids of Helgoland. FORSTRAND : Echinoids of Bermuda Coral Reefs. GAUTHIER : Fossil Echinoids. IVES. JULIEN : Fossil Echinoids. LUDWIG (1) : Echinoderms new to Ceylon. LÜTKEN. V. MARENZELLER (2). NORMAN : *Asterias tenuispina* not British. PFEFFER. RAMSAY (1, 2). SABATIER. SAUVAGE. SCHLUMBERGER : Eocene Holothurians of Paris. SENNES : Cretaceous Echinids of the West Pyrenees. SLUITER (1, 2, 3) : Echinoderms of the Java Sea. SOMERVILLE. STÜRTZ : palæozoic Asteroids and Ophiuroids. TOUCAS : fossil Crinoids and Echinoids. WELSCH (1) : Jurassic Echinoids and Crinoids. WELSCH (2) : Cretaceous Echinoids. WHITELEGGE : Echinoderms of Port Jackson.

VIII.—SYSTEMATIC.

HOLOTHURIOIDEA.

Chirodota undulata, Schlumberger, to be *Théelia undulata*, p. 197, figs. 13 & 14 ; *C. lavigata*, n. sp., p. 196, fig. 11 ; *C. curriculum*, n. sp., p. 197, fig. 12 ; SCHLUMBERGER.

Cucumaria inconspicua, Bell, to be united with *Thyone rosacea*, Semper ; vide LUDWIG (1).

Holothuria aspera, n. sp., p. 455, pl. xviii, fig. 3 ; BELL (2). *H. heilprini*, n. sp., p. 318, pl. viii, figs. 1-6 ; *H. silamensis*, n. sp., p. 320, pl. viii, figs. 7-9 ; *H. nitida*, n. sp., p. 322, pl. viii, figs. 10-18 ; IVES. *H. lamperti*, n. sp., p. 106, figs. 1-3 ; SLUITER (3).

Myriotrochus opercularis, n. sp., SCHLUMBERGER, p. 199, figs. 18 & 19.

Myriotrochus elegans, for *Stueria elegans*, Schlumberger ; SCHLUMBERGER, pp. 198 & 199, figs 15-17.

Phyllophorus perspicillum, Selenka : the question raised by Théel ('Challenger' Reports), as to whether this form belongs to the genus *Phyllophorus* or the genus *Orcula*, is decided by WHITELEGGE in favour of the former genus.

Priscopodatus, n. g., Schlumberger, for *P. irregularis*, n. sp., p. 199, figs. 20 & 21, *P. marginatus*, n. sp., p. 200, fig. 22, *P. normani*, n. sp., p. 200, figs. 23 & 24, *P. pyramidalis*, n. sp., p. 201, figs. 25-29, *P. propinquus*, n. sp., p. 201, fig. 30, *P. multiforis*, n. sp., p. 202, figs. 31 & 32, *P. anceps*, n. sp., p. 202, fig. 33, *P. corolla*, n. sp., pp. 202 & 203, fig. 34, *P. eiffeli*, n. sp., p. 203, figs. 35-37, *P. echinatus*, n. sp., p. 203, fig. 38, *P. crassus*, n. sp., p. 204, fig. 39, *P. inæqualis*, n. sp., p. 204, fig. 40, *P. aspergillum*, n. sp., p. 205, figs. 41 & 42, *P. cribellum*, n. sp., p. 205, fig. 43 ; SCHLUMBERGER.

Stueria elegans, Schlumberger, to be *Myriotrochus elegans*; *id.* pp. 198 & 199, figs. 15-17.

Synapta eocena, Schlumberger, redescribed, p. 193, figs. 1-5; *S. stueri*, n. sp., p. 194, fig. 6; *S. renifera*, n. sp., p. 194, fig. 7; *S. circularis*, n. sp., p. 195, fig. 8; *S. levigata*, n. sp., p. 195, fig. 9; *S. truncata*, n. sp., p. 196, fig. 10; SCHLUMBERGER. *S. ludwigii*, n. sp., p. 108, figs. 4-9; *S. rodea*, n. sp., p. 108, figs. 10-14; SLUITER (3).

Théelia undulata, for *Chirodota undulata*, Schlumberger, p. 197, figs. 13 & 14; SCHLUMBERGER.

Thyone rosacea, Semper: with it are to be united *Thyone sargassi*, Lampert, and *Cucumaria inconspicua*; LUDWIG (1).

Vide also LAMPERT (2) for new species of Holothurians.

ECHINOIDEA.

Adelopneustes, n. g., GAUTHIER.

Coraster margaritæ, n. sp., COTTEAU (3).

Cyclaster gourdoni, n. sp., *id.* (3).

Echinarachnius woodi, Forbes, belongs to the genus *Rhynchopygus*; GREGORY.

Echinolampas blanchardi, n. sp., pp. 288-292, pl. v, figs. 1-12, COTTEAU (1).

Enallaster mexicanus, n. sp., pp. 296-298, pl. ii, *id.* (4).

✓ *Holcopneustes gourdoni*, n. g. & sp., *id.* (3).

Holactypus castilloi, n. sp., pp. 295 & 296, pl. i, *id.* (4).

✓ *Hypopygurus*, n. g., GAUTHIER.

Leiosoma gourdoni, n. sp., COTTEAU (3).

Maretia aragonensis, n. sp., *id.* (3).

Melonites gaudryi, n. sp., p. 736, JULIEN.

Micraster gourdoni, n. sp., COTTEAU (3).

Micropsis frossardi, n. sp., *id.* (3).

✓ *Opisopneustes*, n. g., GAUTHIER.

✓ *Orthechinus*, n. g., *id.*

✓ *Palæechinus lacazei*, n. sp., p. 736, JULIEN.

✓ *Rhabdobrissus julieni*, n. g. & sp., pp. 281-285, pls. ii, figs. 1-4, & iii, figs. 1-6, COTTEAU (1).

Rhynchopygus woodi, Gregory, = *Echinarachnius woodi*, Forbes.

Schizaster edwardsi, n. sp., pp. 286-288, pls. iii, figs. 7-12, & iv, figs. 1-12, COTTEAU (1).

Vide also GAUTHIER, NEUMAYR, and SENNES.

ASTEROIDEA.

STÜRTZ gives the following classification of palæozoic *Stelleridæ* (pp. 245-247):—

I. Suborder. ENCRINASTERIÆ.

Family. *Palæbrisingidæ*. *Loriolaster*, Stürtz, *Cheiroptaster*, Stürtz.

Family. *Palæchinasteridæ*. *Palasteriscus*, Stürtz.

Family. *Palægoniasteridæ*. *Aspidosoma*, Goldfuss, *Palæaster*, Hall.

Family. *Palasterinidæ*. *Palasterina*, McCoy.

Encrinasteriæ of uncertain position: *Aspidosoma*, J. Muller; *Urasterella*, comprising *Schænaster*, Meek & Worthen; *Ptilonaster*, Hall, *Palæocoma*, *Bdellacoma*, and *Rhopalocoma*, Salter.

II. Suborder. STELLERIDÆ VERÆ.

Family. *Palæasteroidea*. *Palasteracanthion*, Stürtz.

Family. *Palælinckiadæ* (?). *Roemeraster*, Stürtz, and perhaps *Lepidaster*, Forbes.

Family. *Palæchinasteridæ*. *Echinasterella*, Stürtz.

Family. *Palægoniasteridæ*. *Xenaster margaritatus*, Simonowitsch.

Family. *Palæastropectinidæ*. *Astropecten*, Stürtz.

Of uncertain position: *Xenaster simplex*, Simonowitsch; *Celaster*, Sandberger; *Archasterias*, Müller; *Asterias* auct.; *Palæostella* and *Medusaster*, Stürtz.

Asterina calcar, Lam., restr. Gray, described, pp. 371 & 372, pl. cc, fig. 1; *A. gunni*, Gray, described, pp. 372 & 373, pl. cc, fig. 2; MCCOY.

Astrogonium greeni, n. sp., p. 433, pl. xix, fig. 4, BELL (2).

Astropecten squamosus, n. sp., pp. 309 & 310; *A. pusillus*, n. sp., p. 311;

A. macer, n. sp., pp. 311 & 312; SLUITER (2).

↓ *Cheiroptaster giganteus*, n. g. & sp., pp. 228 & 229, taf. xxix, fig. 33, taf. xxx, fig. 32; STÜRTZ.

↓ *Echinasterella sladeni*, n. g. & sp., p. 225, taf. xxviii, figs. 26, 26a, & 27, *id.*

Goniaster acutus, Heller, identical with *Goniaster placentaeformis*; LÜTKEN.

Henricia, Gray, has the priority over *Cribella*, for *Asterias sanguinolenta*, O. F. M.; BELL (4).

Lepidaster grayi, Forbes, redescribed, pp. 222 & 223, taf. xxviii, figs. 19 & 20; STÜRTZ.

Loriolaster mirabilis, Stürtz, redescribed, pp. 208–210, taf. xxvi, figs. 3b & 4a; *id.*

↓ *Medusaster rhenanus*, n. g. & sp., pp. 229 & 230, taf. xxxi, figs. 34 & 35; *id.*

Nymphaster protentus, Sladen; for description *vide* BELL (2).

Palæodiscus ferox, Salter, redescribed, pp. 220–222, taf. xxvi, fig. 16; STÜRTZ.

↓ *Palæostella solida*, n. g. & sp., pp. 230 & 231, taf. xxxi, figs. 42 & 43, *id.*

Palasterina follmanni, n. sp., pp. 226–228, taf. xxix, figs. 29, 30, 30a, 31, & 31a; *id.*

Palasteriscus devonicus, Stürtz, redescribed, pp. 223–225, taf. xxviii, figs. 23, 23a, & 23b; *id.*

Pentagonaster (Tosia) aurata, Gray, described, pp. 373–375, pl. cc, fig. 3; MCCOY.

Roemeraster asperula, Stürtz, redescribed, p. 220; STÜRTZ.

Thyraster, n. g., for *Echinaster serpentarius*, M. & Tr.; IVES.

Tropidaster, Stürtz, redescribed, pp. 205–208; STÜRTZ.

Urasterella, McCoy, redescribed, pp. 219 & 220; *id.*

Xenaster margaritatus, Simonowitsch, redescribed, p. 223; *id.*

OPHIUROIDEA.

STÜRTZ gives the following classification of palæozoic Ophiuroids (pp. 245–247):—

I. Suborder. EURYALIDÆ.

Eucladia, Woodward, *Onychaster*, Meek & Worthen, and perhaps *Helianthaster rhenanus*, Roemer, emend., Stürtz.

II. Suborder. OPHIUREÆ.

1. Family. *Ophioencrinasteriæ*.

Protaster, Forbes, &c.; *Tæniaster*, Billings; *Eugaster*, Hall; *Palæophiura*, Stürtz; *Bundenbachia*, Stürtz.

2. Family. *Palæamphiuridæ* (*Protophiuræ*).

1st Group. *Ophiura lymani*, Stürtz.

2nd Group. *Protaster*, Salter; *Furcaster*, Stürtz; *Ophiura zitteli*, Stürtz.

3rd Group. *Ophiura* (*Ophioscolex*) *primigenia*, Stürtz; *Ophiura decheni*, Stürtz.

Bundenbachia beneckeï, Stürtz, redescribed, pp. 216 & 217; STÜRTZ.

Furcaster palæozoicus, Stürtz, redescribed, pp. 214 & 215, taf. xxxi, figs. 40 & 40a; *id.*

Helianthaster rhenanus, Roemer, emend. Stürtz, redescribed, pp. 218 & 219, taf. xxvi, figs. 14a, 15, 15a, taf. xxvii, fig. 14; *id.*

Ophiura primigenia, Stürtz, redescribed, pp. 210 & 211, taf. xxvi, figs. 6, 6a, & 7; *O. decheni*, Stürtz (= *Eoluidia decheni*), redescribed, pp. 211–213, taf. xxvi, figs. 10, 10a, & 11; *O. zitteli*, Stürtz (= *Palastropecten zitteli*), redescribed, pp. 213 & 214, taf. xxvi, figs. 12 & 13; STÜRTZ.

Ophiurina lymani, n. sp., p. 232, taf. xxxi, figs. 36, 36a, & 37; *id.*

Palæophiura solida, n. sp., p. 233, taf. xxxi, figs. 38, 38a, & 39; *id.*

Protaster miltoni, Salter, redescribed, pp. 215 & 216; *P. brisingoides*, Gregory, redescribed, pp. 217 & 218; *id.*

CRINOIDEA.

BATHER (1) gives the following classification of the *Inadumata Fistulata* :—

(?) Family *Hybocrinidæ*. *Hybocrinus*, *Hoplocrinus*, *Bærocrinus*.

Group A.—1. *Heterocrinidæ*.

2. *Calceocrinidæ*.

3. *Catilloocrinidæ*.

Group B.—1. *Dendrocrinidæ*.Series 1. *Dendrocrinites*.Series 2. *Scaphocrinites*.2. *Carabocrinidæ*.3. *Euspirocrinidæ*.4. *Decadocrinidæ*.Series 1. *Botryocrinites*.Series 2. *Scytalecrinites*.Series 3. *Graphiocrinites*.Series 4. *a. Eriocrinites*.*b. Encrinites*.Series 5. *Cromyocrinites*.5. *Cyathocrinidæ*.Series 1. *Cyathocrinites*.Series 2. *Codiocrinites*.Series 3. *Actiradiocrinites*.6. *Belemnocrinidæ*.*Incertæ Sedis—Edriocrinus*.*Antedon pumila*, Bell, description corrected by WHITELEGGE.*Calamocrinus diomedæ*, n. g. & sp., pp. 165–167, AGASSIZ (1).♣ *Thenarocrinus callipygus*, n. g. & sp., BATHIER (2).

VERMES.

BY

P. CHALMERS MITCHELL, B.A., F.Z.S.

- I.—INTRODUCTION, p. 1.
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III.—REFERENCES. SYSTEMATIC CLASSIFICATION, p. 16.
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I.—INTRODUCTION.

AGAIN this year there is a very large amount of Morphological and Zoological work on this large group. There is a valuable monograph by BOEHMIG on Turbellarians, and by JOYEUX-LAFFUIE on *Chaetopterus*. BENHAM has begun an attempt to classify the Earthworms, a group on which a very large amount of work has been published by different authors in recent years. BÜRGER has an important contribution to our knowledge of the structure of the Nemertines. HAMANN gives a number of very suggestive reasons for bringing together the *Nematoda* and the *Acanthocephala*. SCHIMKEWITSCH has summed up the results of his recent researches on *Balanoglossus*, and gives an interesting division of *Cœlomata*, based on the nervous system. WILSON has an important paper on the mesoblast of Annelids, and BERGH on Annelid embryology. MEYER treats of Annelid descent.

19 new genera and 148 new species have been described :—ROTIFERA : *Acanthodactylus*, new genus, and 21 new species. NEMERTEA : *Poliopsis* and *Prosadenophorus*, new genera, and 24 new species. ACANTHOCEPHALA: 4 new species. NEMATODA : 13 new species. OLIGOCHÆTA : *Anisochaeta*, *Bilimba*, *Callidrilus*, *Chatobranchnus*, *Deodrilus*, *Digitibranchus*, *Diporochæta*, *Eudriloides*, *Heliodrilus*, *Hoplochæta*, *Nemertodrilus*, *Polyto-reutus*, *Pygmæodrilus*, *Siphonogaster*, *Stuhlmannia*, new genera, and 38 new

species. POLYCHÆTA : 2 new species. GEPHYREA : 1 new species. HIRUDINEA : 2 new species. TURBELLARIA : *Microplana*, new genus and 28 new species. CESTODA : 6 new species. TREMATODA : *Vallisia*, new genus and 9 new species.

II.—LIST OF PUBLICATIONS.

ANDERSON, H. H. Notes on Indian Rotifers. J. A. S. B. lviii, pp. 345–358, pls. xix–xxi.

Many new species.

ANDREWES, E. A. Notes on the Body-cavity Liquid of *Sipunculus gouldii*, Pourtalès. Johns Hopk. Univ. Circ. ix, p. 65.

APÁTHY, STEFAN. (1) Die Lang'schen leeren Ringe, besonders bei *Hirudo medicinalis*. Zool. Anz. xiii, pp. 320–322. [Postscript to above, Zool. Anz. xiii, p. 351.]

In Lang's text-book the author has overlooked Apáthy's discovery that there are sense-papillæ on all the rings of the leech.

——. (2) A Pióczafélék Külső Alaktanáról. Ért. Term. Kör. xix, 3, 84 pp., 4 pls.

On the external morphology of the leeches. In Magyar only.

BARROIS, J. Quelques mots ou sujet de ma nouvelle conception de l'Organisme Cestode. Rev. Biol. ii, p. 199.

BAVAY, M. Sur la Présence du *Bothriocephalus latus* à Madagascar. Bull. Soc. Z. Fr. xv, p. 134.

BEDDARD, F. E. (1) On the Structure of a Species of Earthworm belonging to the genus *Diachæta*. Q. J. Micr. Sci. xxxi, pp. 159–173, pl. xx.

——. (2) On the Structure of a new Genus of *Oligochaeta*, "*Deodrilus*," and on the Presence of Anal Nephridia in *Acanthodrilus*. Q. J. Micr. Sci. xxxi, pp. 467–488, pls. xxxiii & xxxiiia.

——. (3) Preliminary Note upon *Heliodrilus*, a new genus of *Eudrilidæ*. Zool. Anz. xiii, pp. 627–629.

——. (4) Preliminary Note on a new Earthworm belonging to the family *Eudrilidæ*. T. c. pp. 561–563.

Description of a new genus allied to *Stuhlmannia*.

——. (5) Contributions to the Natural History of an Annelid of the genus *Dero*. P. Z. S. 1889, pp. 440–444, with woodcuts.

Supports the affinity of *Dero* with *Nais*, and describes the genitalia.

——. (6) Observations upon an American species of *Perichæta*, and upon other Members of the Genus. Op. cit. 1890, pp. 52–69, pls. iv & v.

Account of *Perichæta indica*. Revision of *Perichætidae* with *Diporochaeta*, *Anisochaeta* and *Hoplochaeta*, new genera. An account of the spermathecae and nephridia in *Perichæta*, and descriptions of new species.

- [BEDDARD, F. E.] (7) Observations upon the Structure of a Genus of *Oligochaeta*, belonging to the Limicoline section. P. R. Soc. Edinb. xvii, pp. 5-7.

Notes on *Moniligaster*.

- (8) On the Homology between the Genital Ducts and the Nephridia in the *Oligochaeta*. P. R. Soc. xlviii, No. 295, pp. 452-455.

In *Acanthodrilus multiporus* the genital funnels and a portion at least of the ducts are formed out of nephridia.

- (9) On the Anatomy, Histology, and Affinities of *Phreoryctes*. Tr. R. Soc. Edinb. xxxv, pp. 629-640, 1 pl.

BENHAM, W. B. (1) "Atrium" or "Prostate." Zool. Anz. xiii, pp. 368-372, with woodcuts.

Holds, against Beddard, that the "prostates," so-called, of many Earthworms are not to be homologized with the "atria" of *Tubificidae*.

- (2) The Genera *Trigaster* and *Benhamia*. Ann. N. H. vi, pp. 414-417.

A comparison of the characters of these genera.

- (3) An Attempt to Classify Earthworms. Q. J. Micr. Sci. xxxi, pp. 201-315, with zincographs.

Outlines of the Classification :—

Subclass I. NAIDOMORPHA.

Order 1. *Naidina*.

Families. I. *Aphanoneura* ; II. *Naididae* ; III. *Chaetogastridae* ; and the genus *Ctenodrilus*.

Small worms of relatively few somites. Blood uncoloured. Male genital pores in front of somite vii, or in this somite. Asexual as well as sexual reproduction occurs. The anterior few somites of the body are frequently different from the following somites, or the prostomium is pigmented and ciliated. Eye-spots are frequently present.

Subclass II. LUMBRICOMORPHA.

Reproduction only by sexual process. No "cephalization." Somites behind the peristomium all similar, and setæ are similar throughout the body, except in special regions, *e.g.*, on clitellum. Male genital pores behind somite vii. No eye-spots.

Order 1. *Microdrili*.

"*Lumbricomorpha minora*." These are the "Water-worms." Order includes Vejdovsky's Families—*Discodrilidae*, *Enchytraeidae*, *Tubificidae*, *Phreoryctidae*, and *Lumbriculidae*.

Order 2. *Megadrili*.

"*Lumbricomorpha majora*." The Earthworms.

Branch 1. *Plectonephrica*.

Families. *Typhæidae*, *Acanthodrilidae*, *Perichætidae*.

Branch 2. *Meganephrica*.

Families. *Moniligastridae*, *Eudrilidae*, *Perionycidae*, *Geoscolecidae*, *Rhinodrilidae*.

BERGENDAL, D. Studien ueber nordische Turbellarien und Nemertinen. Cefv. Ak. Förh. 1890, pp. 323-328.

A preliminary note. A new Triclad.

BERGH, R. S. (1) Die Schichtenbildung im Keimstreifen der Bluteigel. Zool. Anz. xiii, pp. 658-660.

——. (2) Neue Beiträge zur Embryologie der Regenwürmer. T. c. pp. 186-190.

A preliminary notice. The author criticizes many of E. B. Wilson's conclusions. He strongly supports the view he published in 1885, that in Annelids the mesoderm and ectoderm are closely bound together, so that the mesoderm must be taken as of ectodermal origin.

——. (3) Neue Beiträge zur Embryologie der Anneliden. I. Zur Entwicklung und Differenzirung des Keimstreifens von *Lumbricus*. Z. wiss. Zool. I, pp. 469-526, pls. xix-xxi.

An elaborate paper on the germinal layers in *Lumbricus*.

BLANCHARD, R. (1) Anomalie des Organes Génitiaux chez un *Tania saginata*, Goeze. Bull. Soc. Z. Fr. xv, pp. 166-168, with woodcut.

——. (2) Anomalie des Organes Génitiaux chez un *Tania saginata*, Goeze. C.R. Soc. Biol. 1890, pp. 403-404.

An abnormality due to the fusion of two or more segments.

BOEHMIG, L. Untersuchungen ueber Rhabdocœle Turbellarien. II. *Plagiostomina* und *Cylindrostomina*, Graff. Z. wiss. Zool. ii, pp. 167-479, pls. xii-xxi, 21 woodcuts.

An elaborate monograph on the *Rhabdocœla*. Anatomy, pp. 171-346. Special descriptive part, pp. 346-464. Systematic, pp. 464-470.

Plagiostomina

1. Genus *Plagiostoma*.

Plagiostomina without a tentacle at anterior end.

2. *Vorticeros*.

Plagiostomina with two tentacles at the cephalic end of the body.

Allostomina.

1. *Allostoma*.

Allostomina with a circular furrow, with long cilia about the brain.

2. *Enterostoma*.

Allostomina without special cilia or furrow.

Cylindrostomina.

1. *Cylindrostoma*.

Cylindrostomina, with cylindrical forwardly-directed pharynx. The small penis is similarly directed; the atrium runs beneath the gullet, and both form a short common external opening.

2. *Monosporum*, n. g.

Cylindrostomina with a common opening for pharynx and genitalia towards the posterior end of the body. Penis is directed towards the anterior, the pharynx towards the posterior extremity.

BOLSIUS, H. S. J. Recherches sur la Structure des Organes Segmentaires des Hirudinées. Cellule, v, pp. 369-430, 3 pls. & index.

In all the leeches the cavities of the nephridia are intracellular, except the vesicle at the inferior end. A full account of the histology of the nephridia in *Hirudo*, *Aulastomum*, *Nephelis*, and *Clepsine*, is given.

BOURNE, A. G. (1) *Rotifera*. Reprint from the Encycl. Brit. Zool. articles. London (A. & C. Black): 1891.

——. (2) On *Chaetobranthus*, a new genus of Oligochaetous *Chaetopoda*. Q. J. Mier. Sci. xxxi, pp. 83-89, pl. xii.

Each of the anterior segments, from the second segment backwards, bears a pair of dorso-laterally directed processes, which include some or all of the setæ in the dorsal bundle. The worm is a Naid.

BOURNE, G. C. Report of a Trawling Cruise in H.M.S. 'Research' off the S.W. Coast of Ireland. J. Mar. Biol. Ass. (n.s.) i, pp. 306-323.

Vermes, p. 317.

BRAUN, M. (1) Ueber *Temnocephala*. CB. Bakt. Parasit. vii, pp. 84-90 & 125-128.

A review of our knowledge of *Temnocephala*.

——. (2) Notiz über Auswanderung von Distomen. T. c. p. 568.

A number of examples of *Distomum cylindraceum* left the frogs by the nostrils; they all died in a few hours, and their eggs sank to the bottom of the vessel.

——. (3) Einige Bemerkungen über die Körperbedeckung ektoparasitischer Trematoden. T. c. pp. 594-597.

BUCHANAN, F. *Hekaterobranthus shrubsolei*, a new Genus and Species of the Family *Spionidae*. Q. J. Mier. Sci. xxxi, pp. 175-200, pls. xxi & xxii.

An account of the anatomy of this form. In a postscript it is stated to be probably not a new genus, but a new species of *Streblospio*, Werster.

BÜRGER, O. (1) Untersuchungen ueber die Anatomie und Histologie der Nemertinen nebst Beiträge zur Systematik. Z. wiss. Zool. 1, pp. 1-279, pls. i-x, many woodcuts.

An elaborate anatomical and histological study on the Nemertines. Systematic part, pp. 6-31, with tables of the genera and species; description of 18 new species, and *Prosadenophorus*, new genus. Anatomical and histological part, pp. 32-248. Conclusions, pp. 248-260.

[BÜRGER, O.] (2) Summary of Researches into the Anatomy and Histology of the Nemertines, with Contributions to their Classification. *Ann. N. H.* vi, pp. 394-409.

A translation of BÜRGER (1).

CAMERANO, L. (1) Primi Momenti della Evoluzione dei *Gordii*. *Mem. Acc. Tor.* xl, pp. 1-19, 2 pls.

On the early stages of the development of *Gordius*.

— (2) Nuove osservazioni intorno ai *Gordii* Italiani. III. *Gordii* di Sardegna. *Boll. Mus. Zool. Anat. Comp. Torino*, v, No. 83, 2 pp. *Gordii* from Sardinia.

CERFONTAINE, PAUL. Recherches sur le Système Cutané et sur le Système Musculaire du Lombric terrestre. *Arch. Biol.* x, pp. 327-428, pls. xi-xiv (also in *Mém. Cour. Ac. Belg.* 4to, t. lii, 108 pp., 4 pls., and preliminary account in *Bull. Ac. Belg.* xviii, pp. 604-619).

An important memoir on the anatomy and histology of the skin and muscles.

CHATIN, J. (1) Présence de l'*Heterakis maculosa* chez le Faisan. *Bull. Soc. Philom.* ii, p. 26.

— (2) Sur l'Enkystement prémature de l'*Heterodera schachtii*. *T. c.* pp. 26-28.

— (3) Le Mouton peut-il propager l'*Heterodera schachtii*? *C.R. Soc. Biol.* 1890, pp. 17 & 18.

The sheep is apparently unable to aid the dissemination of this beet-root enemy.

CLAUS, C. On the Morphology and Phylogeny of the Organization of the *Cestoda*. *Ann. N. H.* v, pp. 416-429.

Translation of memoir cited in *Zool. Rec.* 1889.

COBB, N. A. (1) Arabian Nematodes. *P. Linn. Soc. N.S.W.* v, pp. 449-467.

Describes a formula to be used in describing *Nematoda*, e.g. :—

	Pharynx.	Nerve-ring.	Base of Neck.	Vulva.	Anus.
Lengths . . .	1	8.2	17.3	52	93.3
Diameters9	1.5	1.6	1.7	.8
	Pharynx.	Nerve-ring.	Base of Neck.	Vulva.	Anus.

1.77.

1.77, the number to the right, represents the length of the Nematode in millimetres. All the other numbers are percentages of the length. The upper numbers give, in percentages of the total length, the distances from the anterior end to the bottom of the pharynx, to the centre of the nerve-ring, to the posterior end of the oesophagus, to the vulva, and to the anus. The numbers on the lower side of the line similarly relate to the diameters of the animal at these points. Several species are described, some new, and their formulæ are given.

[COBB, N. A.] (2) *Oxyuris* Larvæ hatched in the Human Stomach under abnormal conditions. P. Linn. Soc. N.S.W. v, pp. 168-185, pl. viii.

As the result of experiments concludes that this parasite normally hatches on introduction to the human stomach, but a certain amount of the development may go on outside the host, as is usual in parasitic *Nematoda*. Observations on the structure of the adult and the larva are given.

CRETY, C. (1) Contribuzione all' anatomia del Sistema Muscolare e Nervoso del *Dibothriorhynchus benedenii*, Crety (*Tetrarhynchus tenuis*, van Beneden). Boll. Soc. Nat. Napoli, iv, pp. 39-44.

A preliminary note on the muscular and nervous system.

— (2) Sopra alcuni Cisticerchi di una Foca (*Monachus albiventer*, Gray). T. c. pp. 106-108.

CUÉNOT, M. L. Formation des Produits Génitaux par les Glandes Lymphatiques (invertébrés). C.R. Ass. Fr. Sci. 1889, ii, pp. 581-586.

Annelids and Gephyreans, pp. 583 & 584. Concludes that the lymphatic cells develop into ova and spermatozoa.

DADAY, E. (1) Ein interessanter Fall der Heterogenesis bei den Rädertieren. Math. Nat. Ber. Ung. vii, pp. 140-156, pl. i.

Asplanchna sieboldii.

— (2) A Nápolyi öböl Rotatoriái. Ért. Term. Kör. xix, 7, 52 pp. 2 pls.

On Rotifers, with many new species. In Magyar only.

DAWSON, SIR J. W. On Burrows and Tracks of Invertebrate Animals in Palæozoic Rocks, and other Markings. Q. J. Geol. Soc. xlv, pp. 595-698, with many woodcuts.

Sabellarites, n. g., p. 605. Combination of worm-tracks with ripple-marks and shrinkage cracks, pp. 610-612.

— (2) Notes on a Fossil Fish and Marine Worm found in the Pleistocene Nodules of Green's Creek on the Ottawa. Can. Rec. iv, pp. 86-88.

The worm is a *Nereis*.

DENDY, A. The Anatomy of an Australian Land-Planarian. Tr. R. Soc. Vict. ii, pp. 50-94, pls. vii-x.

On *Geoplana spenceri*, n. sp. An account of the habits, anatomy, and histology.

DEWITZ, JOH. Bericht ueber die Rotatorien-Literatur der Jahre 1887 und 1888. Arch. f. Nat. 1888, ii, pp. 43-62.

ERLANGER, R. v. Der Geschlechtsapparat der *Tania echinococcus*. Z. wiss. Zool. i, pp. 555-559, pl. xxiv.

ETHERIDGE, R. On the Occurrence of the Genus *Turrilepas* and Annelid Jaws in the Upper Silurian (? Wenlock) Rocks of New S. Wales. Geol. Mag. 1890, pp. 337-340, pl. xi.

3 new species of Annelids, from jaws.

FIorentini, A. Sull' Ossiuride vivipara (*Oxyuris vivipara*, Probstmayer),
Boll. scient. xii, pp. 21-25, with pl.

FLETCHER, J. J. Notes on Australian Earthworms. vi. P. Linn. Soc.
N.S.W. iv, pp. 986-1019.

Many new species.

FORBES, S. A. (1) An American Terrestrial Leech. Am. Nat. 1890,
pp. 646-649.

On *Semiscolax terrestris*, n. sp., from Illinois. Feeds on Earthworms,
which it swallows entire.

— (2) On an American Earthworm of the Family *Phreoryctidae*.
Bull. Illin. Lab. N. H. iii, pp. 106-118, pls. vi-viii.

Anatomy of *Phreoryctes emissarius*, n. sp. ~

— (3) An American Terrestrial Leech. T. c. pp. 118-122.

On *Semiscolax terrestris*, n. sp.

GIARD, A. Sur la parenté des Annelides et des Mollusques. C.R. cx,
pp. 90-93.

Suggests a phylum *Gymnotoca*.

<i>Gymnotoca</i> - - -	{	1. <i>Mollusca</i> .
	2.	<i>Annelida</i> .
	3.	<i>Brachiopoda</i> .
	4.	<i>Ciliata</i> , incl. <i>Rotifera</i> , <i>Gasterotricha</i> , and <i>Bryozoa</i> .

GRAFF, L. Planarians. Reprint from Encycl. Brit. Zool. articles.
London (A. & C. Black) : 1891.

GRASSI, B., & CALANDRUCCIO, S. Ueber *Hæmatozoon lewisi*. Entwick-
lungscyklus einer *Filaria* (*F. recondita*, Grassi) des Hundes. C.B.
Bakt. Parasit. vii, pp. 18-26, with woodcuts.

HALLEZ, P. Catalogue des Turbellariés (Rhabdocœlides et Dendro-
cœlides) du Nord de la France et de la Côte Boulonnaise récoltés
jusqu' à ce jour. Rev. Biol. ii, pp. 160-163, 200-206, 227-234, 312-
320, & 393-402.

HAMANN, O. (1) Die Lemnischen der Nematoden. Zool. Anz. xiii, pp.
210-212.

The lemnisci of *Echinorhynchus* have homologues in *Nematoda*.

— (2) Monographie der Acanthocephalen (Echinorhynchen). Ihre
Entwicklungsgeschichte, Histogenie, u. Anatomie. Jen. Z. Nat. xxv,
pp. 113-231, pls. v-xiv.

Embryology, segmentation, &c., pp. 117-124. Larval forms, pp. 124-
131. Anatomy, etc., of adult, pp. 132-202. The lemnisci are compared
to the ampullæ of starfish. They act as part of the force-pump appa-
ratus for ejecting the proboscis, and as a reservoir for the fluid of the
lacunar system when the proboscis is withdrawn. Systematic and bio-
logical part, pp. 202-215, with 2 new species. General part, pp. 215-221.
Echinorhynchus claviceps is a paidogenetic form.

- HARMER, S. F. On Living Specimens of a Land Planarian found in Cambridge. P. Cambr. Phil. Soc. vii, p. 83.
Rhynchodemus terrestris.
- HERTWIG, O. Vergleich der Ei- und Samenbildung bei Nematoden. Eine Grundlage für celluläre Streitfragen. Arch. mikr. Anat. xxxvi, pp. 1-138, pls. i-iv.
- HORST, R. Descriptions of Earthworms. Notes Leyd. Mus. xii, pp. 231-237, pl. x.
 Two new *Perichæta*.
- HUBRECHT, A. A. W. Nemertines. Reprint from the Encycl. Brit. Zool. articles. London (A. & C. Black): 1891.
- IMHOF, O. E. (1) Notizen ueber die pelagische Thierwelt der Seen in Kärnthen und in der Krain. Zool. Anz. xiii, pp. 261-263, 347-349, & 372-377.
 List of pelagic fauna, including Rotifers, of these lakes.
- . (2) Notiz ueber das Vorkommen von *Pedalion mirum*, Hudson. T. c. pp. 609-611.
 Account of its occurrence.
- IVES, J. E. On *Arenicola cristata* and its allies. P. Ac. Philad. 1890, pp. 73 & 74.
- JAMMES, J. Sur la Constitution Histologique de quelques Nematodes du genre *Ascaris*. C.R. cxi, pp. 65 & 66.
- JOUBIN, L. (1) Recherches sur les Turbellariés des Côtes de France (Némertes). Arch. Z. expér. viii, pp. 461-602, pls. xxv-xxxi.
 An account of the occurrence and distribution. Systematic, with descriptions of species. *Poliopsis*, n. g., of *Palæonemertina*.
- . (2) Recherches sur la Faune des Turbellariés des Côtes de France. C.R. Ass. Fr. Sci. 1889, ii, pp. 520-579.
- JOURDAN, E. Sur un Tissu Epithelial Fibrillaire des Annelides. C.R. cxi, pp. 825 & 826.
- JOYEUX-LAFFUIE. Étude monographique du Chétoptère (*Chaetopterus variopedatus*, Rénies) suivie d'une Revision des espèces du genre *Chaetopterus*. Arch. Z. expér. viii, pp. 245-360, pls. xv-xx.
 An elaborate monograph.
- KELLCOTT, D. S. A New Rotiferon. P. Am. Micr. Soc. xi, pp. 32 & 33, with woodcut.
Cephalosiphon furcillatus, n. sp.
- KINGSLEY, J. S. Record of American Zoology. Am. Nat. 1890, pp. 351-357.
Vermes, p. 354.
- KULAGIN, N. Zur Anatomie der in Russland vorkommenden Regenwürmer. Zool. Anz. xiii, pp. 404-406.
 Additions to paper in Zool. Anz. 1888.
 1890. [VOL. XXVII.]

LEIDY, J. Notices of *Entozoa*. P. Ac. Philad. 1890, pp. 410-418.

With many new species.

LEVINSEN, G. M. R. Om to nye Regnormslægter fra Ægypten. Vid. Medd. 1889, pp. 318-322, pl. vii.

On two new earthworms from Egypt: *Siphonogaster ægyptiacus*, n. g. & sp., and *Digitibranchus niloticus*, n. g. & sp.

LINDENFELD, H., & PIETRUSZYNSKI, J. Przyczynek do Fauny Pijawek Krajowych (*Hirudinea*). Pam. Fizjogr. ix, pp. 237-248, pl. viii; *op. cit.* x, pp. 399-437, pl. xiv, and woodcuts.

On Polish leeches. In Polish only. Several new varieties and a new *Clepsine*.

LINDNER, DR. Ueber Biologie und hygienische Bedeutung der in Essig lebenden Fadenwürmer oder Nematoden (*Anguillula aceti*, Ehrenbg., *A. oxophila*, Schneider). Ber. Ver. Cassel, xxxvi & xxxvii, pp. 41-45.

LINSTOW, DR. V. (1) *Grus viridirostris* getödtet durch den Parasitismus von *Syngamus sclerostomum*, Molin. CB. Bakt. Parasit. viii, pp. 259-261, with woodcuts.

——. (2) Ueber *Allantonema* und *Diplogaster*. *T. c.* pp. 489-493, with woodcuts.

——. (3) Beitrag zur Kenntniss der Vogel-Tæmien, nebst Bemerkungen ueber neue u. bekannte Helminthen. Arch. f. Nat. 1890, i, pp. 171-188, pl. x.

——. (4) Ueber den Bau und die Entwicklung des *Distomum cylindraceum*, Zed. Arch. mikr. Anat. xxxvi, pp. 173-191, pls. vii & viii.

LOEB, J. Weitere Untersuchungen ueber den *Heliotropismus* der Thiere und seine Uebereinstimmung mit den *Heliotropismus* der Pflanzen. Arch. ges. Phys. xlvii, pp. 391-416, pl. ix.

Pp. 393-403 are on Heliotropism in *Spirographis spallanzanii*.

LOENNINGER, E. Ueber *Amphiptyches* Wagener oder *Gyrocotyle urna* (Grube et Wagener), Diesing. Biol. Fören. ii, pp. 55-61.

A preliminary note.

LOMAN, J. C. C. Ueber neue Land-Planarien von den Sunda-Inseln. Zool. Ergebnisse einer Reise in Niederländisch Ost-Indien von Max Weber. Leiden: 1890. Verlag von Brill. Heft. 1, pp. 131-158, pls. xii & xiii.

Many new species, and an account of the anatomy.

LORD, J. E. Notes on the Genus *Distyla*. Tr. Manch. Micr. Soc. 1890, pp. 40-43, 1 pl.

MALAQUIN, A. Les Annélides Polychètes des Côtes du Boulonnais. Rev. Biol. ii, pp. 175-185, 275-285, 380-392, & 435-439 (with a new species of *Procerastea*); *op. cit.* iii, pp. 97-105.

MARK, E. L. *Trichinæ* in Swine. From the 28th Annual Report Mass. State Board of Health for 1888, pp. 113-134.

Tabular statistics of the trichinous hogs found at Boston and Chicago are given. It is suggested that the source of infection is sometimes trichinous rats, but more often offal containing pieces of trichinous flesh.

MAUPAS, E. (1) Sur la Multiplication et la Fécondation de l'*Hydatina senta*. J. Microgr. 1890, pp. 242-245.

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Gastroneura: Ganglion in head and two ventral chords.

Tetraneura (*Mollusca*): Ganglion in head, and two ventral and two lateral chords.

Cycloneura (Echinodermata): No head ganglion; œsophageal ring and five radial branches.

Notoneura (Enteropneusta and Chordata): No head ganglion, but with dorsal nerve tube.

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[VEJDOVSKÝ, F.] (3) Příspěvky k nauce o vývoji srdce annulatův.
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Work done chiefly on *Nereis limbata* and *N. megalops*. In them the mesoblast arises from a ventral plate, and is apparently ectoblastic, as in *Lopadorhynchus*. But in reality all the ventral plate is segregated at the anterior end from two pro-teloblasts homologous with those in *Clepsine*. One of these teloblasts gives rise to the anterior part of the ventral plate, and is the origin of the mesoblast; the other gives rise to the posterior part, from which come the neural plates, setæ sacs, &c. In this way the discrepancies of *Lopadorhynchus* come into relation with the usual teloblasts of Annelid development.

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III.—REFERENCES. SYSTEMATIC CLASSIFICATION.

GENERAL.

- Vermes*, Italian Bibliography ; PARONA.
- Vermes* from off S.W. Coast of Ireland ; BOURNE, G. C.
- Fossil *Vermes* : *Sabellarites*, n. g. ; *S. trentonensis*, pp. 605-607, figs. 11 & 12 ; tracks from Silurian of Canada ; worm-trails and ripple-marks ; DAWSON (1).

ROTIFERA.

- Account of the group ; BOURNE, A. G. (1).
- Review of literature from 1887-1888 ; DEWITZ.
- Rotifera* from India ; ANDERSON.
- List from Rostock ; TESSIN.
- Pelagic *Rotifera* of Carinthian Lakes ; IMHOF (1).
- Acanthodactylus*, n. g. of *Macroductylea* ; *A. tigris*, = *Diurella tigris* ; TESSIN.
- Actinurus ovatus*, n. sp., p. 351, pl. xx, figs. 6 & 6a ; ANDERSON.
- Asplanchna amphora*, description, with figs. ; WESTERN (1).
- A. sieboldii* : heterogenesis ; DADAY (1).
- Bothriocerca longicauda*, n. sp., p. 20, pl. ii, fig. 14 ; *id.* (2).
- Brachionus longipes*, n. sp., p. 357, pl. xxi, fig. 12 ; *B. bidentata*, n. sp. p. 357, pl. xxi, fig. 13 ; ANDERSON.
- Cephalosiphon furcillatus*, n. sp., KELLICOTT.
- Colurus rotundatus*, n. sp., p. 24, pl. i, figs. 23-26, & pl. ii, figs. 3-7 ; *C. truncatus*, n. sp., p. 25, pl. i, figs. 16 & 30, & pl. ii, figs. 17-19 ; DADAY (2).
- Distyla*, with figs. ; LORD.
- Diurella marina*, n. sp., p. 16, pl. i, figs. 2, 3, 9, & 10 ; *D. brevidactyla*, n. sp., p. 19, pl. ii, fig. 13 ; DADAY (2).
- Floscularia tenuilobata*, n. sp., p. 346, pl. xix ; ANDERSON.
- Furcularia neapolitana*, n. sp., p. 14, pl. i, figs. 2, 6, 12, 22, 33, & 34, DADAY (2).
- Hydatina senta* : multiplication and impregnation ; MAUPAS (1, 2).
- Monommata grandis*, n. sp., p. 152, fig. 12, TESSIN.

- Metopidia torquata*, n. sp., p. 356, pl. xxi, figs. 9 & 9a ; *M. angulata*, n. sp., p. 356, pl. xxi, fig. 10 ; ANDERSON.
Oechistes stephanion, n. sp., p. 347, pl. xx, fig. 2, *id.*
Pedalion minor : distribution ; IMHOF (2).
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Pterodina intermedia, n. sp., p. 356, pl. xxi, fig. 11, ANDERSON.
Ptilodina hirsuta, pl. xx, fig. 4, ANDERSON.
P. macrostyla : description, with figs. ; WESTERN (2).
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Stephanoceras eichornii : remarks on anatomy, with figs. ; VALLENTIN.
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NEMERTEA.

General account ; HUBRECHT.

Nemertea from coast of France : anatomy, with many figs. ; JOUBIN (1).

Nemertea : systematic and anatomy ; BÜRGER.

Amphiporus vittatus, n. sp., p. 570, JOUBIN (1). *A. amboiensis*, n. sp., p. 26, BÜRGER.

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Cerebratulus albobittatus (Stimps.), Bürger, syn. *Meckilia albobittatus*, p. 11, fig. 1 ; *C. psittacinus*, n. sp., p. 13, fig. 2 ; *C. glaucus*, Bürger, syn. *Nemertes collaris*? (Schmrd.), p. 15, fig. 3 ; *C. galbanus*, n. sp., p. 16, fig. 4 ; *C. tigrinus*, n. sp., p. 16, fig. 5 ; *C. spadix*, n. sp., p. 17, fig. 6 ; *C. pullus*, n. sp., p. 18 ; *C. luteus*, n. sp., p. 19 ; *C. rubens*, n. sp., p. 20, fig. 7 ; *C. aurostratus*, n. sp., p. 21, fig. 8 ; *C. coloratus*, n. sp., p. 22, fig. 9 ; BÜRGER.

Drepanophorus latus, n. sp., p. 27, figs. 12, 13, & 13a ; *D. cerinus*, n. sp. ; *id.*

Eupolia brockii, n. sp., p. 22, fig. 10 ; *E. marmorata*, n. sp., p. 24, fig. 11 ; *E. ascophora*, n. sp., p. 24 ; *id.*

Nemertes duossi, n. sp., p. 587, pl. xxv, fig. 10, JOUBIN (1).

† *Poliopsis*, n. g. of *Palæonemertines* ; *P. lacazei*, n. sp., p. 521, pl. xxv, figs. 3 & 4 ; *id.*

‡ *Prosadenophorus*, n. g., p. 29 ; *P. arenarius*, n. sp., p. 30 ; *P. badiogagatus*, n. sp., p. 31, fig. 14 ; *P. janthinus*, n. sp., p. 31, figs. 15 & 15a ; *P. oleaginus*, n. sp., p. 32 ; *id.*

Tetrastemma marionis, n. sp., p. 581 ; *T. rustica*, n. sp., p. 583 ; JOUBIN (1).

ACANTHOCEPHALA.

Monograph of the group ; HAMANN (2).

Systematic, pp. 203-215 ; *id.* (2).

Echinorhynchus claviceps: pædogenesis; *id.* (1). *E. linstowi*, n. sp., pp. 207 & 208; *E. lutzii*, n. sp., p. 208; *id.* (2). *E. paucihamatus*, n. sp., LEIDY. *E. taniaeformis*, n. sp., p. 179, fig. 4, LINSTOW (3).

NEMATODA.

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 Formation of ovum and spermatozoa; HERTWIG.
 Formula for describing Nematodes; COBB (1).
Nematoda from Arabia; *id.* (1).
Allantonema, LINSTOW (2).
Angiostomum nigrovenosum, Rud., p. 185, figs. xviii-xx; *id.* (3).
Anguillula aceti: biology; LINDNER.
Ascaris: histology; JAMMES. *A. gracillima*, n. sp., p. 184, fig. 18, LINSTOW (3). *A. diacis*, n. sp., p. 411, LEIDY.
Atractis (Ascaris) opeatura, n. sp., p. 411, *id.*
Dacnitis globosa, Duj., p. 183, figs. xii-xvii; LINSTOW (3).
Desmodora nudicapitata, n. sp., COBB (1).
Diplogaster, LINSTOW (2).
Filaria hyalina, n. sp., p. 182, fig. 9, *id.* (3). *F. primana*, n. sp., p. 410, LEIDY. *F. semi-inclusa*, n. sp., PHISALIX.
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Hamatozoon lewisi, GRASSI & CALANDRUCCIO.
Heterodera schachtii not transmitted by sheep; CHATIN (3). Premature encystment, *id.* (2).
Heterakis maculosa in the pheasant; *id.* (1).
Hypodontolaimus arabicus, n. sp., COBB (1).
Oxysoma terdentatum, n. sp., p. 182, figs. x & xi, LINSTOW (3).
Oxyuris vermicularis: life-history, anatomy, development, with figs.; COBB (2). *O. vivipara*: anatomy, with figs.; FIORENTINI.
Spilophora ceylonensis, n. sp., COBB (1).
Strongylus convolutus, n. sp., OSTERTAG.
Syngamus sclerostomum, LINSTOW (1).
Trichinæ in American hogs; MARK.
Trichosoma, Rud.: monograph; STOSSICH (1). *T. spinulosum*, n. sp., p. 185, LINSTOW (3). *T. tenuissimum*, n. sp., p. 417, LEIDY.

ENTEROPNEUSTA.

SCHIMKEWITSCH.

ANNELIDA.

Parentage, GIARD. Descent, MEYER.
 Formation of Gonads in lymphatic tissue; CUÉNOT.
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 Origin of metamerism and meaning of the mesoderm; MEYER.

- Development of blood-vessels ; VEJDOVSKY (3).
 Origin of mesoblast ; WILSON, BERGH (2).
 Pelagic *Annelida* in St. Andrew's Bay ; M'INTOSH.
 Annelid tracks in Carboniferous shales of Rhode I. ; DAWSON (1).
 Fossil *Annelida* : *Eunicites mitchelli*, n. sp. ; *Arabellites bourningensis*, n. sp. ; *Ænonites hebes*, n. sp. ; ETHERIDGE.

CHÆTOPODA.

I. OLIGOCHÆTA.

- Attempt to classify Earthworms ; BENHAM (3).
 Homology between genital duct and nephridia ; BEDDARD (8).
 Homologies between atria and prostates ; BENHAM (1).
 Points in Earthworm anatomy ; KULAGIN.
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Acanthodrilus macleayi, n. sp., p. 999, FLETCHER. *A. georgianus*, Mich., p. 57, MICHAELSEN (4).
Acanthodrilus : anal nephridia ; BEDDARD (2).
Allolobophora : *A. georgii*, n. sp., p. 53, MICHAELSEN (4) *A. limicola*, n. sp., p. 10 ; *A. hermanni*, n. sp., p. 13 ; *id.* (1). *A. studiosa*, n. sp., *id.* (3).
Allurus dubius, n. sp., p. 7 ; *A. hercynius*, n. sp., p. 7 ; *id.* (1).
 ✓ *Anisochaeta*, n. g. of *Perichætidae* ; BEDDARD (6).
 ✓ *Bilimba*, n. g. ; *B. papillata*, n. sp., p. 386 ; ROSA (3).
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 ✓ *Callidrilus*, n. g. ; *C. scrobifer*, n. sp., pl. iii, fig. 16, pl. iv, fig. 18 ; *id.* (2).
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 ✓ *Deodrilus*, n. g., Ceylon ; *D. jacksoni*, n. sp. ; BEDDARD (2).
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 ✓ *Desmogaster*, n. g. ; *D. doriae*, n. sp., p. 369 ; ROSA (3).
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 ✓ *Digitibranchus*, n. g. ; *D. ægyptiacus*, n. sp. ; LEVINSEN.
 ✓ *Diporochaeta*, n. g. of *Perichætidae* ; BEDDARD (6).
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 ✓ *Eudriloides*, n. g. ; *E. parvus*, n. sp., p. 35, pl. i, figs. 1 & ii ; *E. gypsatus*, n. sp., p. 43, from Zanzibar ; MICHAELSEN (2).
 ✓ *Heliodrillus*, n. g. from Lagos ; BEDDARD (3).
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BY

DR. SYDNEY J. HICKSON.

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II.—MORPHOLOGY.

GENERAL.

A concise and well illustrated account of the developmental history of the *Cœlenterata* will be found in the first part of KORSCHOLT & HEIDER's text book (55).

VON MARENZELLER (66) gives a very useful list of the popular German names of many of the genera of *Cœlenterata*.

HYDROZOA.

BRAUER (14), in a preliminary note on the development of *Hydra aurantiaca*, states that the polar bodies are normally formed on the side of the egg turned away from the parent before the ectoderm sheath is ruptured. The molecules in the polar bodies are not yolk spherules, but nuclear fragments. A blastula is formed by total and regular segmentation of the ovum. The blastocoel is formed at the stage with eight segments. The endoderm is formed by mixed delamination. The ectodermic sheath is not lost on the formation of the ectoderm of the embryo. The eggshell is a cuticular structure.

NUSSBAUM (73), and WEISMANN (91) discuss Ischikawa's investigations on the artificial introversion of *Hydra* [vide Zool. Rec. 1889].

SCHNEIDER (80) gives an account, illustrated by numerous figures, of a detailed investigation of the histological structure of *Hydra fusca*. He describes the nerve-cells and nerve-fibrils found in the ectoderm, and considers that the epithelio-muscular cells should no longer be termed "neuro-muscular" cells, since the nerve cells and fibrils probably perform the same functions as the nervous tissues of other *Metazoa*. Although an organic connection between the nerve-fibrils and nematocysts has not yet been demonstrated, it seems probable on physiological grounds that such a connection does exist. Important details concerning the minute structure of the three different kinds of nematocysts and of the endoderm are given.

In *Tubularia larynx* and *Eudendrium ramosum* a system of ganglion cells and nerve-fibrils was found, answering in structure and position to those of *Hydra*.

BOVERI (13) finds two polar bodies are protruded from the ovum of *Tiara* (sp. ?).

CHATIN (15) denies the existence of free nuclei in the ovary of *Hydra*. Each nucleus is surrounded by a delicate layer of protoplasm.

DRIESCH (22) continues the account of his investigations on the formation of the hydroid colonies. He finds (25) that in *Sertularella polyzonius*, the stolons produced in unfavourable positions are at first positively, and—after the production of daughter-stolons—negatively, heliotropic.

McINTOSH (67, 1) describes some *Medusæ* that are apparently abnormal forms of *Thamantias melanops*. The reproductive bands form a conspicuous cross over the disc. There is no mouth and no manubrium.

FOWLER (31) found two specimens of the hydroid polyp of *Limnocoedium sowerbyi* throwing off *Medusæ*. The bud of a new hydroid polyp differs from the parent only in the uniform cubic shape of the ectoderm cells, in the absence of a mouth, of nematocysts, and of the little mass of cells probably answering to the "Glockenkern" that is present in the parent, and in the non-differentiation of the endoderm into two regions. The medusa, in the only specimen examined, was found at the apex of the polyp. At the apex, the ectoderm grows inwards to form a solid plug of cells, which probably represents the præumbrel lid, and a somewhat globular mass of more vacuolated cells, which forms the sub-umbrella cavity. These two masses of cells represent probably the "Glockenkern."

HICKSON (42) describes the lenticular mass of cells that supports the large telolecithal egg of *Allopora*, and proposes that it should be called the "trophodisc." The trophodisc is formed by the folding of one wall of a cœnosarcial canal that contains an ovum. It rapidly becomes more and more complicated as the ovum enlarges. Soon after the ovum is fertilized, the trophodisc atrophies. The ovum does not undergo a process of segmentation. The germinal vesicle, after fertilisation has taken place, fragments, and the ectoderm is formed by a process similar to free-cell formation. The embryo escapes from the colony as a solid planula.

HICKSON (44), in a preliminary note on the meaning of the ampullæ of *Millepora murrayi*, states that they are occupied by modified dactylozooids

bearing the male sexual products. The same author gives a preliminary note (43) on the male gonangia of *Allopora* and *Distichopora*. (A more complete description, with illustrations of these structures, has been published in the Q. J. Micr. Sci. 1891.)

VIGUIER (88) gives an elaborate account of the remarkable Hydro-medusan *Tetraplatia volitans*, and asserts that it is impossible to give it its proper position in classification until the whole of its life-history is known.

BIGELOW (8) finds that in *Pelagia*, *Chrysaora*, and *Dactylometra*, with increased complexity in the general characters, there is, both phylogenetically and ontogenetically, an increase in the complexity of the marginal organs, but the steps in the ontogeny are not strictly identical with the conditions at the corresponding points in the phylogeny of the species.

The same author (7), in describing some physiological experiments on *Caravella*, states that there was no rhythm observed in the contractions of the tentacles, but the cormidia contracted at the rate of eight contractions a minute. Exposure to unfavourable conditions causes the appendages to become detached, even while still alive. The cormidia may be cut into small pieces, and each piece retain its vitality. The food consists of small fish.

CLAUS (16, 17) finds that the embryonal development of *Cotylorhiza*, up to the gastrula stage, takes place within the egg-membrane. There is no irregular immigration of cells into the blastula cavity, which is formed by invagination. The young *Scyphostoma* forms the proboscis very early, and before the formation of the four perradial tentacles. In distinction to Hydroid polyps, the young *Scyphostoma* is characterised not only by the ectodermal nature of the proboscis, but also by the production of four diverticula of the stomach and an even number of tæniolæ. The four septal muscles originate by the immigration of ectoderm cell-knobs from the peristom, and come secondarily into relation with the tæniolæ. The multiplication by strobilisation is a form of "alternation of generations."

WAGNER (89) gives some further details of the structure of the interesting Hydrozoon, *Monobrachium parasiticum*. In the centre, the colony is almost entirely composed of sexual individuals; between the centre and the periphery these are mixed with hydranths, and at the periphery itself there are some special forms called pseudo-nematophores. The pseudo-nematophores represent probably the spiral zooids of *Podocoryne* and *Hydractinia*. The ectoderm shows signs of degeneration due to parasitism; in the absence of a sub-epithelium there is an absence of nervous system and an almost complete want of differentiation of the cells. The endoderm of the tentacles shows a condition intermediate between that of solid and hollow tentacles.

The Keimstätte is the hydrorhiza. The sexual cells pass along the endoderm to the ventral ectoderm of the radial canals. This is, then, one of the rare cases of the migration of the sexual cells in a form with a fully developed medusa.

Lo BIANCO & PAUL MAYER (64) announce that they have been able to

prove that Metschnikoff's view that *Nausithoë* is a stage in the life-history of *Stephanoscyphus mirabilis*, Allm., = *Spongicola fistularis*, F. E. Schultze, is true. This is of great importance, as it places beyond doubt the fact that *Spongicola* belongs not to the *Hydroidea*, but to the *Acalephæ*.

SPENCER (82) describes the remarkable new hydroid *Clathroozon*, and proposes that it should be placed in a new family, *Hydroceratinidae*. The family, by a combination of remarkable characters, seems to be distinct from any known family of Hydroids.

ANTHOZOA.

ZOANTHARIA.

DANIELSSEN's important monograph (19) contains a full description of several new families, genera, and species, of Sea Anemones. Of special interest is the full description of the genera *Fenja* and *Aegir*, illustrated by numerous figures.

FAUROT (26, 27) states that there are ten distinct pairs of mesenterial septa in *Peachia hastata*. Twelve are large, eight are small and not attached to the stomodæum, and there are two pairs of directive septa. The septa of the third order are sterile. The same author (28) describes the order of development of the septa of *Halcampa chrysantellum*. The smaller septa, twelve in number, are all sterile.

The curious larva described by VAN BENEDEN (5) probably belongs to the *Zoanthineæ*. The general form of the body is characterised by considerable elongation, by the existence of six well-developed sarcosepta, the total absence of any trace of tentacles round the mouth, and principally by the presence of a median vibratile fringe.

BERANECK (6) remarks that the marginal corpuscles of the *Actiniæ* are not eyes, but batteries of nematocysts.

McMURRICH (68) describes the structure of *Cerianthus americanus*. The largest specimens were 20 cm. long, and 1.5 to 2 cm. in diameter at the middle. Twenty-three out of a total of ninety-two mesenteries are well developed. The ventral directives are very short, and hardly extend below the level of the lower opening of the stomodæum. There are four grades of mesenteries. Three grades are gonophoric, the fourth is not. The specimen described was female, and showed no signs of being hermaphrodite. The endodermal musculature of the mesenteries consists of a flat layer on each side of the mesogloea. No mesenterial stomata were found.

FOWLER (30) describes the anatomy of *Duncania*, which he finds to be a true Madreporarian, differing in no point of importance from the ordinary type. He gives a good figure of the soft parts of a species of *Madrepora*, and describes the anatomy of *Galaxea esperi*, *Heteropsammia multilobata*, and *Bathyaëctis symmetrica*.

AGASSIZ examined (1) four specimens of corals taken in 1888 from the cable between Havanna and Key West, that was laid in 1881, in six to seven fathoms of water. The specimens were in average thickness about

2½ inches, and they must have attained this size in less than seven years. The species were *Orbicella annularis* (two specimens), *Manicina areolata*, and *Isophyllia dipsacea*.

BELL (4) gives a preliminary note on two Antipatharians, *Gerardia savalia* and *Antipathes robillardii*.

VON KOCH (54) gives a demonstration of the relation between the hard and soft parts of *Flabellum*, *Galaxea*, and other corals. The same author (52, 1) remarks that in *Astroides calicularis* the tentacles are greatly contracted and withdrawn during retraction. They are surrounded by an annular rim of the body-wall, but occasionally a portion of the basal part of the tentacles telescopically protects them.

In a note (52, 2) on septal budding in *Madreporaria*, VON KOCH asserts that this phenomenon does occur in *Madreporaria*, notwithstanding Neumayr's assertion to the contrary. There is also a note (52, 3) on the true and false synapticulæ of *Fungia*.

ORTMANN (76) gives a systematic account of the skeleton, and mode of gemmation in several species of corals.

ALCYONARIA.

VON KOCH (52, 1) gives a note on the terminal polype and siphonozoid of *Pennatula* and *Pteroides*, and remarks that in *Rhizoxenia rosea* a partial invagination of the base of the tentacle takes place during retraction.

The same author (53) remarks that *Sympodium coralloides* is a true Alcyonid adapted to live on a *Gorgonia* stem; he proposes to change the name to *Alcyonium coralloides*.

THURSTON (83, 84) and GATHORNE HARDY (37) give some notes on the habits of *Virgularia*.

SAVILLE KENT (78) considers that it is possible that *Heliopora cœrulea* may be a tubicolous Annelid.

HICKSON (41) and HADDON (35) maintain that *Heliopora* is undoubtedly an Alcyonarian.

HASSE (39) describes two species of fossil corals from the Middle Lias of Gotha that he considers to be fossil Alcyonaria, possibly allied to *Duca* and *Drifa*.

CORAL REEF PROBLEMS.

BÜTTGER (12) gives a historical account of our knowledge of coral reefs and islands, and an elaborate list of books and papers referring to the subject.

LANGENBECK's important work (56) contains full discussions of many of the most important problems concerning the formation of coral reefs and islands. It contains an elaborate discussion of the supposed coral reef origin of the Dolomites.

VON LENDENFELD (63, 1), in giving a general support to the Dar-

winian theory of coral reefs, maintains that the Dolomites afford an instance of fossil reefs that have been formed during subsidence.

WHARTON (93, 1), in referring to Von Lendenfeld's letter, asks where in modern seas there are to be found atolls rising 10,000 feet from the sea bottom; and points out (2), in further reply to Von Lendenfeld, that neither Keeling, Diego Garcia, nor Bermudas are certainly instances of this. He further asks if anyone can explain, on the subsidence theory, why atolls have usually such shallow lagoons.

WHARTON (93, 3) and BASSET-SMITH (3) agree that "drowned atoll" is not a good term to apply to the Macclesfield bank.

MOORE & BASSET SMITH (70) give an account, illustrated by some excellent charts and sections, of the Macclesfield and Tizard banks in the China Sea.

MURRAY & IRVINE (71) give an elaborate account of the carbonate of lime formations in modern seas.

HEILPRIN (49) points out that coral reefs do occur in the western waters of the Gulf of Mexico. They belong to that group recognized by Darwin as being built upon shoals and beds of sediment. They give no evidence in favour of or against the subsidence theory.

III.—REVIEWS AND NOTICES.

GUPPY (34) gives an account of Sluiter's researches on the coral reefs of the Java seas.

VON LENDENFELD (57) reviews Walther's book on the corals of the Sinai peninsula.

VON LENDENFELD (58, 59, 60), ORTMANN (74, 75), and VANHÖFFEN (87) review the recent literature on *Cælenterata*.

VON LENDENFELD also gives special notices of (61) Miss Greenwood's paper on the Digestion of *Hydra*, and (62) Hertwig's Supplement to 'Challenger' *Actiniae*.

SCHIMKEWITSCH (79) gives, in Russian, a critical review of recent papers on the development of the *Hydrozoa*.

IV.—DISTRIBUTION.

1. GENERAL.

HAECKEL (37) describes the *Cælenterata* of the Plankton.

2. EUROPEAN WATERS.

BOURNE describes a collection of Hydroids (10) from the neighbourhood of Plymouth, and (11) from the South-west coast of Ireland.

HADDON (36) describes a collection of *Actiniae* from the South-west coast of Ireland.

DANIELSSEN (19) describes a collection of Sea Anemones made in the North German ocean.

ROBERTSON (77) found *Pennatula* and *Virgularia* in the Clyde sea area, but not *Pavonaria*. *Pavonaria* occurs in 10-12 fathoms, off Oban.

McINTOSH (67) refers to the existence of Ctenophores and certain *Hydromedusæ* and *Scyphomedusæ*, at all seasons of the year, in Scottish waters.

3. AMERICAN WATERS.

FEWKES (29) describes a collection of *Medusæ* made by the naturalists of the 'Albatross' in the Gulf Stream.

VON KENNEL (49) describes a new fresh-water *Medusa* from the West Indies.

4. AZORES.

STUDER (81) describes a number of Gorgonians collected by the Prince of Monaco, principally in the neighbourhood of the Azores.

5. AUSTRALIAN WATERS.

SPENCER (82) reports upon some *Hydroidea*, and HICKSON (45) upon some *Anthozoa*, from Victoria.

6. MALAY ARCHIPELAGO.

MITCHELL (69) reports upon a new Sea Anemone from North Celebes.

V. SYSTEMATIC.

HYDROZOA.

HYDROIDEA.

CALYPTOBLASTEA.

HYDROCERATINIDÆ, new family, SPENCER (82). Hydrophyton consisting of a mass of entwined hydrorhiza, with a skeleton in the form of anastomosing chitinous tubes; the surface is studded with tubular hydrothecæ, into which the hydranths can be completely retracted. Hydranths sessile, and connected with more than one hydrorhizal tube, claviform, with a single vertical filiform tentacle. Defensive zooids present, with a solid endodermal axis and nematocysts borne at the distal end. ✓ *Clathrozoon wilsoni*, n. g. & sp., near Port Phillip Heads, Victoria, p. 123.

✓ *Haloikema*, n. g., family *Haleciidæ*. Stems erect, simple or sparingly branched, ringed. Hydrothecæ pedicellate, hydranths large, non-retractile. BOURNE (10). *H. lankesterii*, Plymouth, p. 395.

MARKTANNER TURNERETSCHER (86) describes the following new species :—

Campanularia chinensis, Tschifu, p. 204. *C. thyroscyphiformis*, Cebu, p. 206. *C. borealis*, Deevie Bay, p. 206. *C. integriformis*, Trieste, p. 206,

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- Obelia chinensis*, Yellow Sea, p. 210. *O. aruensis*, Aru Is., p. 210.
Thyrosocyphus vitiensis, Viti Is., p. 210.
Hypanthia atlantica, 60° S., 38° W., p. 211.
Halisiphonia dumosa, Rovigno, p. 212.
Hebella cylindrata, Rovigno, p. 214. *H. contorta*, Singapore, p. 215.
Clytia elongata, Auckland, p. 215.
Sertularella novaræ, St. Paul, p. 226. *S. annulata*, Kiama, p. 227. *S. arboriformis*, Indian Ocean, p. 228.
Sertularia huttoni, New Zealand, p. 233.
Pasythia philippina, Cebu, p. 234.
Symplectoscyphus australis, Australia, p. 235.
Dynamena tubuliformis, Dschidda, p. 238. *D. mediterranea*, p. 242.
✓ *Calyptothuiaria*, n. g. This genus stands between *Sertularella* and *Thuiaria*; with the former it has relations in its much folded perisarc, with the latter in the arrangement of the hydrothecæ. *C. clarkii*, Indian Ocean, p. 243. *C. magellanica*, Magellan Straits, p. 344.
✓ *Monopoma*, n. g. This genus has relations to the genus *Abietinaria*, but differs from it in the possession of an operculum. *M. variabilis*, Yellow Sea, p. 246.
Plumularia hians, Naples, p. 253. *P. californica*, Puget Sound, p. 255.
P. ventriculiformis, Rovigno, p. 256. *P. leichtensternii*, Rovigno, p. 257.
✓ *Acladia*, n. g., allied to *Antenella*, but differs from it in unjointed stem and numerous longitudinally striated stalked hydrothecæ. *A. africana*, Algoa, p. 261.
Aglaophenia tubiformis, Rovigno, p. 269. *A. helleri*, Rovigno, Naples, p. 271. *A. roretzii*, Japan, p. 261. *A. balii*, p. 272, Red Sea.
Halicornaria flabellata, Red Sea, p. 278.
SPENCER (82) describes *Plumularia procumbens*, Port Phillip, Victoria, p. 130.

GYMNOBLASTEÆ.

Eudendrium novæ-zealandiæ, Auckland, p. 201, TURNERETSCHER (86).

HYDROCORALLINÆ.

WENTZEL (92) describes the following fossil corals, which he believes to be Hydrocorallines, from the Sub-Permian :—

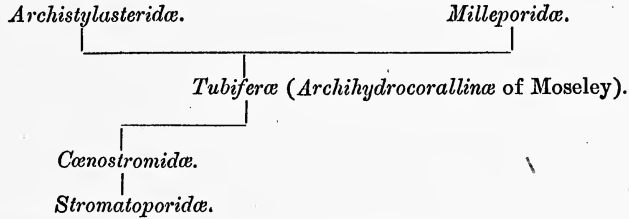
Family TUBIFERÆ.

- ✓ *Irregularatopora*, n. g. Calyx is section irregularly formed. Trabeculæ are present in the broader canals of the meshes of the cœnosarc. *I. undulata*, Bilote, p. 15.
✓ *Disjectopora*, n. g. Calyces diverging from the middle to the outer surface of the stock, dispersedly arranged, provided with tabulæ. Outside the cœnosarc meshwork there are present broad and smaller serpentine canals. *D. millæformis*, Morah, p. 16.

Family CÆNOSTROMIDÆ.

Arduorhiza, n. g. *Astrorhiza* with radial tube springing obliquely from the central canal. Central canal centrally placed in the middle of the stock. *A. pyramidata*, Chidroo, p. 17.

WENTZEL arranges these families in the following manner :—



Heterastridium pachystylum, FRECH, (32) p. 97.

Family LAMELLATÆ.

Of uncertain position, but probably belonging to *Hydrocorallinæ*. Lamellæ concentric, separated by interlaminar spaces or bound together by sharp septa. Lamellæ and septal walls perforated. *Circopora*, n. g. *C. multitubulosa*, Morah, p. 20. *C. faverlata*, Morah, p. 20. WENTZEL (92).

SIPHONOPHORA.

✓ *Pleurophysa*, n. g., FEWKES (29), destitute of nectocalyces and hydrophyllia. The axis is thick, and all the appendages arise from one side of the stem. *P. insignis*, Gulf Stream, p. 517.

ACRASPEDA.

✓ *Halmonises*, n. g., VON KENNEL (49). Without marginal knobs, cirrhi, or marginal vesicles. Sixteen to eighteen tentacles, with swollen bases and a simple pigment ring on the outer side. Velum thin, but broad. Manubrium quadrangular, without oral-lappets. Four radial canals, with gonads. 2-2½ mm. in diameter. *H. lacustris*, fresh water lagoon, W. Indies.

GRAPTOLITIDÆ.

HOLM (47) describes *Dictyonema cervicorne*, *D. abnorme*, *Retiolites geinitzianus*.

TORNQUIST (85) describes *Clonograptus robustus*, *Tetragraptus curvatus*, *Didymograptus gracilis*, *D. decens*, *Climacograptus internexus*, *Diplograptus bellulus*.

ANTHOZOA.

ACTINIARIA.

HEXACTINIÆ (Hertwig).

DANIELSSEN (19) describes the following :—

✓ *Korenia*, n. g. The pedal disc is lanceolately expanded, embraces nearly completely a thin cylindrical foreign body (the stem of *Bathycrinus*). The body oblong, strongly ribbed, and furnished with hollow papillæ. The oral disc exposed. Many perfect septa. Mesodermal circular muscles. Few tentacles, placed in several series. *K. margaritacea*, p. 1, 1085–1333 fathoms.

✓ *Kylindrosactis*, n. g. The pedal disc round, with thick undulating margin. The body cylindrical, smooth, with fine longitudinal stripes, suckers, and cinclides. Oral disc round, radiate. The tentacles retractile, long, not numerous, and in few series. Circular muscles distinctly endodermal. The principal and secondary septa perfect, but sterile. Numerous tertiary and quaternary imperfect septa, carrying reproductive organs and acontia. *K. elegans*, p. 4, 127 fathoms.

PARACTIDÆ (Hertwig).

✓ *Kadosactis*, n. g. The pedal disc round, discoidally expanded. The body shaped like an urn, with broad transverse folds, and a prominent constriction immediately above the pedal disc; on its exterior surface a great multitude of minute suckers. The tentacles in few series, short and retractile. Numerous perfect septa. Mesodermal circular muscles. *K. rosea*, p. 8, 1215 fathoms. *K. hyalina*, p. 11, 146–416 fathoms.

New Family SIDERACTIDÆ. *Dan*

Actiniaria with numerous perfect septa. Few series of short, non-retractile tentacles, of which the innermost contains eight mesodermal circular muscles.

✓ *Sideractis*, n. g. The pedal disc broad, furnished with extremely fine longitudinal stripes. The body smooth, with fine longitudinal furrows. The tentacles non-retractile in few series. The first inner series contains eight tentacles. Sixteen pairs of perfect septa. Mesodermal circular muscles. *S. glacialis*, p. 14, 263 fathoms.

SAGARTIDÆ.

✓ *Stelidiactis*, n. g. The pedal disc membranaceously expanded, enclasps thin round objects (branches of *Mopsea borealis*). The body forms a round pillar, is longitudinally ribbed and furnished with cinclides. The oral disc covered by the margin of the body. The tentacles short, retrac-

tile, not numerous, placed in one or two series. Six pairs of perfect septa. Mesodermal circular muscles. *S. mopsiæ*, p. 17, 90 fathoms. *S. tubulariæ*, p. 19, 155 fathoms.

✓ *Allantactis*, n. g. The pedal disc embracing large objects, such as *Nep- tunia curta*, with a thick margin, bent inwards. The column cylindrical, folded transversally, has a free, erect superior margin (parapét) and scattered cinclides. The tentacles not numerous, short, retractile, in a few series. Six perfect sterile septa. No acontia. Prominent mesodermal circular muscles. Hermaphroditic. *A. parasitica*, p. 20, 525 fathoms.

✓ *Anthosactis*, n. g. Pedal disc round, with thick margin, the column cylindrical, wall membranous, smooth, with longitudinal folds and cinclides. The oral disc round. The tentacles retractile, about uniform in size, short, few in number, in few series. Mesodermal circular muscles. Six pairs of completely sterile septa. No acontia. *A. jan mayeni*, p. 24, ? loc.

Sagartia repens, p. 27, 147 fathoms. *S. splendens*, p. 33, Sognefjord.

Calliactis krøyeri, p. 36, 109 & 60 fathoms.

Family BUNODIDÆ.

Bunodes abyssorum, p. 39, 127 & 672 fathoms.

Family TEALIDÆ.

✓ *Tealiopsis*, n. g. The pedal disc round, with indented margin. The body cylindrical, covered with a tough integument encrusted with grains of sand and fragments of shells; inside of this, on the integument proper, a multitude of distinct suckers, placed in longitudinal series. The oral disc folded. The tentacles retractile, placed in few series. Prominent endodermal circular muscles. Numerous perfect septa. *T. polaris*, p. 45, 223 fathoms.

New Family MADONIACTIDÆ. *Don.*

Hexactinia, with few principal septa, acontia; and a prominent endo- dermal circular muscular system.

✓ *Madoniactis*, n. g. The pedal disc round, a little wider than the body. The latter is cylindrical, about the same in height as in breadth, smooth, furnished with dispersed cinclides. Parapet and fossa. The tentacles in several series, retractile, short. Both the tentacles and the oral disc covered by the margin of the body. Six pairs of perfect septa, sterile. Acontia. The circular muscles distinctly endodermal. *M. lofotensis*, p. 47, 90 fathoms.

Family PHELLIDÆ.

Phellia flexibilis, p. 51, 566 fathoms. *P. margaritacea*, p. 54, 1110-1333 fathoms. *P. arctica*, p. 57, 191 fathoms. *P. crassa*, p. 60, 191 fathoms.

P. bathybia, p. 64, 1163 fathoms. *P. norvegica*, p. 67, 127 fathoms. *P. violacea*, p. 70, 1287 fathoms. *P. spitzbergensis*, p. 74, 260 fathoms.

✓ *Kodiodes*, n. g. The body encrusted, piriform, with a long bare stem terminating in a pedal disc. Two series, containing a few retractile tentacles. Twelve pairs of septa, of which six pairs perfect. Suckers on the encrusted portion of the body. No siphonoglyphe. Mesodermal annular muscles. Acontia. *K. pedunculata*, p. 77, 1081 fathoms.

Cactosoma. The body claviform, with an encrusted covering, the uppermost part bare. Distinct pedal disc. The surface of the body furnished with suckers. Two series of retractile tentacles. Six pairs of perfect septa, of which two pairs are directive septa, all of them carrying mesenterial filaments and reproductive organs. Six pairs of imperfect sterile septa. Two siphonoglyphes. Mesodermal circular muscles. *C. abyssorum*, p. 82, 457 fathoms.

New Family ✓ ANDVAKIADÆ. *San*

Hexactiniæ elongated, seated loose in the sand, without any real pedal disc, the greater part of the body encrusted; the uppermost base part of the body, the oral disc and the tentacles completely retractile; few septa.

Andvakia, n. g. *Andvakiadæ* with six pairs of perfect, sterile septa; six pairs of imperfect, almost rudimentary, septa, carrying acontia and reproductive organs; strongly developed endodermal circular muscles. Cinclides. *A. mirabilis*, p. 86, Sognefjord, 100-150 fathoms.

Subfamily HALCAMPIDÆ.

✓ *Halcampoides*, n. g. The body elongate, cylindrical, terminating conically in a round caudal aperture, and furnished with a thin encrusted sheath. One tentacular series. Six pairs of perfect septa, carrying mesenterial filaments and reproductive organs. Distinct endodermal circular muscles. The stomodæum divided longitudinally. *H. abyssorum*, p. 93, 457 & 620 fathoms.

Tribe EDWARDSIÆ.

Family EDWARDSINÆ.

✓ *Edwardsioides*, n. g. The body cylindrical, vermiform, furnished with eight longitudinal furrows, and intervals closely occupied by suckers. The scapus has a thin, transparent covering. The capitulum bare with a series of marginal retractile tentacles. The physa small and non-retractile. Eight septa. The circular muscles endodermal. Hermaphrodite. *E. vitrea*, p. 100, 457 fathoms.

Edwardsia andresi, p. 106, 263 fathoms. *E. fusca*, p. 112, 148 fathoms. *E. costata*, p. 115, 263 fathoms.

ZOANTHIDÆ.

New Family Mardoellidæ.

Zoanthidæ forming colonies, which, by means of a common rounded basal part, live freely in or upon sand without attachment.

✓ *Mardoella*, n. g. *Mardoellidæ* with firm, encrusted integument; endodermal circular muscles. Macrosepta perfect, carrying reproductive organs and mesenterial filaments. Microsepta imperfect, sterile. A siphonoglyphe. Diccious. *M. erdmanni*, p. 117, 191–870 fathoms.

Epizoanthus arborescens, p. 126, 135 fathoms. *E. glacialis*, p. 129, 457, & 620 fathoms. *E. roseus*, p. 134, 620 fathoms.

CERIANTHEÆ.

Cerianthus vogti, p. 137, 498 fathoms. *C. abyssorum*, p. 143, 634 fathoms.

Tribe AEGIREÆ.

Actinida with a perfect body cavity (cœlom), and a developed digestive apparatus consisting of œsophagus, intestine, and anus.

The two genera, *Fenja* and *Aegir*, belonging to this family were described two years ago [*vide* Zool. Rec. 1888], but in this monograph of Danielssen's they are more fully described and beautifully illustrated.

New family Thelaceridæ.

MITCHELL (69). This family belongs to the *Corallimorphidæ*, and is defined as follows:—

Hexactinæ without a sphincter, cinclides, or acontia, with numerous accessory rudimentary tentacles, so that more than one tentacle communicates with a radial chamber, with the normal tentacles covered by small, compound, hollow protuberances. The accessory tentacle rudimentary. ✓ *Thelaceros rhizophoræ*, n. g. & sp., North Celebes, shallow water.

ANTHEADÆ (?).

✓ *Hoplophoria*, n. g., WILSON (94). This anemone is distinguished by the presence of four large, conspicuous, finger-like organs just below the circlet of tentacles, provided with batteries of nematocysts. They are diverticula of the spaces included between mesenteries of the second order. They are probably homologous with the marginal sacs of *Actinia mesembryanthemum*. Further characters are, that six pairs of mesenteries are complete and only four of them bear generative organs. *H. coralligens*, found in a hole half-inch deep, in a piece of Asteroid coral, on fringing reef of the Bahamas.

MADREPORARIA.

BASSET-SMITH (2) describes the following new species from the Macclesfield and Tizard bank in the China Sea :—

- Stylophora guentheri*, Macclesfield, 22 & 32 fathoms, p. 362.
Seriatopora imbricata, Tizard, $\frac{1}{2}$ fathom, p. 363. *S. compacta*, Tizard, 5 $\frac{1}{2}$ fathoms, p. 364. *S. tenuis*, Tizard, 6 fathoms, p. 365. *S. armata*, Tizard, 7 fathoms, p. 365.
Galaxea equalis, Tizard, 6 fathoms, p. 368.
Symphyllia labyrinthica, Tizard, 5 fathoms, p. 369.
Pavonia pretiosa, Tizard, 27 fathoms, p. 444. *P. ramosa*, Macclesfield, 26 fathoms, p. 445.
Montipora porosa, Macclesfield, 35 fathoms, p. 451.
Madrepora dendrum, Macclesfield and Tizard, 20 & 27 fathoms, p. 452.
M. compressa, Tizard, 5 fathoms, p. 452. *M. fragilis*, Tizard, 27 fathoms, p. 455. *M. rambleri*, Macclesfield, 26 fathoms, p. 455.
Alveopora tizardi, Tizard, 27 fathoms, p. 458.

KOBY (51) brings to a conclusion his great monograph on the Jurassic corals of Switzerland, and adds the following new species :—

- Dendrohelix ursicina*, p. 457.
Psammohelia fromenteli, p. 458.
Heterocœnia rutimeyeri, p. 460. *H. mertani*, p. 461.
Stylina lorioli, p. 462.
Diplocœnia ursicina, p. 464. *D. decemradiata*, p. 465.
Cryptocœnia tenuistriata, p. 465. *C. bonanomii*, p. 467. *C. delemontana*, p. 468.
Convexastræa schardti, p. 469. *C. alveolata*, p. 470. *C. gillieronii*, p. 470.
Cyathophora thurmanni, p. 472.
Cladophyllia tenuis, p. 474.
Dermosmilæa suberassa, p. 475. *D. alpina*, p. 476. *D. simplex*, p. 476.
D. pusilla, p. 477.
Baryphyllia rauracina, p. 478.
Diploria corallina, p. 479.
Latimæandru bonanomii, p. 481. *L. fringeliana*, p. 482.
Chorisæastræa etalloni, p. 483.
Isastræa sulcata, p. 485.
Leptophyllia lobata, p. 485.
Thamnastræa thurmanni, p. 488. *T. stutzii*, p. 489.
Microsolena verdati, p. 489.
 FRECH (32) gives the following new genera and species of fossil corals from the Trias. [A preliminary account of some of these is given by the same author in (33)] :—
Thecosmilæa norica, p. 9. *T. fenestrata* = *Clamophyllia fenestrata*, Reuss, p. 9. *T. charlyana*, p. 11. *T. ? cyathophylloides*, p. 12. *T. bavarica*, p. 18. *T. rofanica*, p. 18.

- Rhabdophyllia delicatula*, p. 19.
Isastræa austriaca, p. 23. *I. oligocystis*, p. 24. *I. norica*, p. 25. *I. encystis*, p. 26.
Phyllocænia incrassata, p. 30. *P. grandissima*, p. 31. *P. kokeni*, p. 32.
Stylina norica, p. 33.
Astrocænia waltheri, p. 34. *A. ohmanni*, p. 34. *A. hexactis*, p. 35.
Stephanocænia juvavica, p. 38.
Montivaltia norica = *M. cupuliformis*, p. 39. *M. fritschi*, p. 40. *M. marmorea*, p. 41. *M. gosaviensis*, p. 41.
[†]*Stylophyllopsis*, n. g. Simple or slightly-branched. Approximately similar to *Montivaltia* in transverse section, and *Stylophyllum* in longitudinal section. *S. polyactis*, p. 48. *S. zitteli*, p. 49. *S. rudis*, p. 50. *S. cæspitosa*, p. 52. *S. mojsvari*, p. 52. *S. lindstromi*, p. 53.
Stylophyllum paradoxum, p. 54. *S. tenuispinum*, p. 55. *S. pygmaeum*, p. 56. *S. polyacanthum*, p. 57. Subgenus *Mæandrostylis*. *S. (M.) irregulare*, p. 58.
Thamnastræa norica, p. 63.

Subfamily ASTRÆOMORPHINÆ.

- [†]*Procycolites*, n. g. Consisting of single, or, more seldom, two fused individuals. Calyx deep. Inner structure somewhat similar to *Cycloletes*, but the septa soon coalesce into compact lamellæ. The number of pores that remain open is very small. *C. triadicus*, p. 64.

SPONGIOMORPHIDÆ, n. fam.

- [†]*Spongiomorpha*, n. g. A peculiar genus that is distinguished from *Astræomorpha* by the almost complete degeneration of the radial septa. *S. acyclica*, p. 77. *S. minor*, p. 78.
 Subgenus *Heptastylopsis*. *H. gibbosa*, p. 75. *H. ramosa*, p. 76.
Heptastylis stromatoporoides, p. 73.
Stromatomorpha stylifera, p. 79.

RUGOSA.

FRECH (32) describes the following new genera and species:—

CYATHAXONIDÆ.

New subfamily *Gigantostylinae*. Septa rudimentary. The elongated pali occupy the greater part of the calyx. Septal groove absent. No trace of endothelial structures.

- [√]*Gigantostylis epigonus*, n. g. & sp., p. 82.

ZAPHRENTIDÆ.

[√]*Pinacophyllum*, n. g. Septa short or medium in length, irregularly alternate, always toothed at the upper margin. Multiplication takes place by regular dichotomy. *P. parallelum*, p. 86.

- P. annulatum* = *Fletcheria annulata* (Reuss), = *Amplexus reussi* (Frech), p. 87.

Coccophyllum acanthophorum, p. 89.

HINDE (46) describes, from Western Australia :—

Cyathophyllum virgatum, Devonian ?, p. 194.

✓*Pterophyllum*, n. g. Simple conical, turbinate, or sub-cylindrical corals, with deep calyces. Five prominently developed septa, which reach nearly to the centre of the calyx, the other septa sub-equal. The outer surface exhibits either shallow annulations or longitudinal striae, or, more rarely, spinous projections. *P. australe*, Carboniferous, p. 196. *P. sulcatum*, Carboniferous, p. 197.

Pachypora tumida, Devonian.

WEBSTER (90) describes the new genus *Macgeea*, from the Devonian of Iowa.

Solitary cylindrical compressed cup-shaped cells, 5–47 mm. in length. Calyx 1½–18 mm. in diameter. Slightly curved; extremely irregular; evidence of attachment. Allied to *Pachyphyllum*.

M. solitaria = *Pachyphyllum solitarium*. *M. parva*, p. 711. *M. culmula*, p. 712.

ALCYONARIA.

HASSE (39) describes 2 species of fossil Alcyonarians (?):—

Alcyonaria langenhani and *A. hexabranhia*, allied to *Ceriopora striata* of Goldfuss.

STOLONIFERA.

HICKSON (45) describes *Clavularia australiensis*, p. 157, *C. ramosa*, p. 157, and *C. flava*, p. 140, from Victoria, Australia.

GORGONIDÆ.

STUDER (81) describes :—

✓*Chelidonisis*, n. g. This genus has close relations with the *Ceratoisidinae*, more particularly *Sclerisis*, but the spicules are analogous with those of a true *Isis*. *C. aurantiaca*, Azores, 454 metres, p. 553.

Acanthogorgia truncata, N. of Spain, 240 metres, p. 555. *A. verrilli*, 46° N., 49° E., 1267 metres, p. 555. *A. horrida*, N. Spain, 300 metres, p. 555.

Muriceides furcata, Azores, 454 metres, p. 556.

Clematissa sceptum, Azores, 1135 metres, p. 556.

Eunicella dubia, Azores, p. 557.

Verrucella guernei, Azores, 318–354 metres, p. 559.

PENNATULIDÆ.

Prographularia, n. g., FRECH (32). Similar to *Graphularia*, but the surface is covered with strong longitudinal stripes, and connected by two symmetrically placed deep furrows. *P. triadica*, p. 90.

SPONGIÆ.

BY

E. A. MINCHIN, B.A.

INTRODUCTION.

THE amount of Sponge literature for this year is not very large, but contains some valuable additions to our knowledge of this group. Foremost amongst them may be mentioned the works of MAAS on the development of *Spongilla*, and TOPSENT (6),* on the structure, system, and biology of the *Clionidæ* and *Renierinæ*. Other papers of importance are: for anatomy and morphology, DENDY (2), on Sollas's membrane and the phylogeny of the *Keratosa*, and FOL, on the oft-discussed "filaments" of *Hircinia*; for embryology, VOSMAER (1), on the development of a Silicosponge, and DENDY (3), on the pseudogastrula stage of a Sycon; while the statements of YVES DELAGE as to the structure of the larva of *Esperella* are very remarkable. Works of systematic importance are: DENDY (1), VON LENDENFELD (10), POČTA, TOPSENT (1, 2, 6), and WEBER.

MAAS shows that the larva of *Spongilla* does not throw off its ectoderm, as supposed by GÖTTE, but that its ectoderm passes continuously into that of the adult, while VOSMAER makes the same observation on the larva of *Myxilla* sp. Other interesting points which may be noted in the development of *Spongilla* are: the morula stage; the curiously modified gastrulation; the closure of the blastopore; the free swimming larva, with all the structure of the adult Sponge, but without openings, the formation of which in a mechanical manner constitutes the metamorphosis; the fixation by the pole of the blastopore; and the derivation of the excurrent system and the chambers from the archenteron, while the inhalent system is derived from the ectoderm.

* This work was published in 1888, but the volume of the Arch. Z. expér. in which it appeared did not reach English libraries until 1890, and the Zoological Record of 1888 contained merely the bare name of the paper, the Recorder not having been able to see it. Hence I have included it in this year.—E. A. M.

TOPSENT's statement [TOPSENT (6)], that the contractile cells in siliceous Sponges are the flattened ectoderm and endoderm, while the mesoderm forms only the connective tissue and the amœboid digestive cells, is very striking, and if confirmed would furnish a comment on the classification of the *Cœlentera* given by VON LENDENFELD (7) into *Mesodermalia* (Sponges), with mesodermal organs, and *Epithelaria* (*Cnidaria*), with epithelial organs.

LIST OF PUBLICATIONS.*

ANON. Notizie Sulla Pesca delle Spugne nei Banchi di Lampedusa. Ministero della Marina. Tipografia Bencini, Rome and Florence, 1890. [Cf. Zool. Gart. xxxi, No. 1 (Jan., 1890), p. 28; Nature, xli, p. 284.]

An account of the Sponge banks, and of the method of fishing and preparing the Sponges.

BERTHOULE, AMÉDÉE. Les Lacs d'Auvergne. Bull. Soc. Acclim. xxxvii, No. 1, Jan. 5th, 1890, pp. 13-27.

Euspongilla lacustris, Vejdovsky, abundant in Lake Pavin (p. 25) : described by PAUL GIROD, Travaux du Laboratoire de Zoologie, 1877-78, i, pp. 1, *et seq.*

Methods for the Preservation of Marine Organisms employed at the Naples Zoological Station. [Abstract by PLAYFAIR McMURRICH of the paper by LO BIANCO.] Am. Nat. xxiv, No. 285 (Sept., 1890), pp. 856-865.

Sponges, p. 860.

CHATIN, J. Contribution à l'étude du Noyeau chez les Spongiaires. C.R. cxi, No. 23 (8th Dec., 1890), p. 889.

[*Vide infra*, Anatomy, &c.]

DALLA TORRE, V. Fauna der Insel Helgoland. Zool. Jahrb., Suppl. ii, 1889.

The following Sponges occur :—CALCAREA : *Sycandra ciliata*, *Leucandra nivea*, *Ascandra complicata*. SILICEA, &c. : *Vioa celata*, *Halichondria reticulata*, *H. aspera*, *Halisarca lobularis*, *H. dujardini*.

DELAGE, YVES. Sur le Developpement des Éponges Silicieuses et l'homologation des feuillets chez les Spongiaires. C.R. cx, No. 12, p. 654. Abstr. in J. R. Micr. Soc. 1890, pt. 3, No. 76, p. 344.

[*Vide infra*, Embryology.]

DENDY, ARTHUR. (1) Observations on the West Indian Chalinine Sponges, with Descriptions of New Species. Tr. Z. S. xii, pt. 10 (April, 1890), pp. 349-368, pls. lviii-lxiii. Abstr. in J. R. Micr. Soc. 1890, pt. 3, No. 76, p. 344.

Following species described : *Pachychalina variabilis*, n. sp., Nassau,

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

Bahamas; *Siphonochalina spiculosa*, n. sp., Turk's I., Bahamas; *S. procumbens*, Carter, West Indies, Grenada; *S. ceratosa*, n. sp., Nassau, Bahamas; *Spinosella sororia*, Duch. & Mich., West Indies; *S. sororia* n. var. *dilatata*, Bahamas; *S. sororia* n. var. *fruticosa*; *S. sororia* n. var. *elongata*; *S. plicifera*, Duch. & Mich., Bahamas; *S. maxima*, n. sp., Jamaica; *S. velata*, n. sp., Bahamas. [*Vide infra*.]

[DENDY, ARTHUR.] (2) Some Old and New Questions concerning Sponges. Zool. Anz. xiii (1890), No. 325, pp. 14-17. Abstr. in J. R. Micr. Soc. 1890, pt. 3, No. 76, p. 343.

The questions at issue are: (1) "Sollas's membrane"; (2) the true name of *Stelospongos flabelliformis*, Carter; (3) the relationship between *Homorhaphidæ* and *Ceratosa*. [*Vide infra*.]

— (3) On the Pseudogastrula Stage in the Development of Calcareous Sponges. P. R. Soc. Vict. Nov. 14th, 1889 (1890), pp. 93-101, pl. 1a. Abstr. in J. R. Micr. Soc. 1890, pt. 4, No. 77, p. 470.

[*Vide infra*.]

FAUROT, L. La pêche des Éponges dans le Golfe de Gabès. Rev. Sci. xlv, No. 14, pp. 428-431.

FOL, H. Sur l'Anatomie des Éponges Cornées du genre *Hircinia* et sur un genre nouveau. C.R. cx, No. 23, p. 1209. Transl. in Ann. N. H. (6) 1890, p. 172, et seq. Abstr. in J. R. Micr. Soc. 1890, pt. 4, No. 77, p. 470.

[*Vide infra*.]

*GAUDRY, —. Les Enchainements du Monde Animal dans les temps géologiques fossiles secondaires. Paris: 1891. Sponges, pp. 33-37.

GIARD, ALFRED. Le Laboratoire de Wimereux en 1889. (Recherches fauniques.) Bull. Sci. Fr. Belg. xxii, 1^{re} partie, 1890, pp. 60-87.

Sponges, pp. 70-72. The following species occur:—*Ascetta coriacea*, Montague (*Tarrus*, *Auloplegma*, and *Ascometra* forms), *Ascandra variabilis*, Hæckel (*Soleniscus* and *Olynthus* forms), *Leucandra nivea*, Grant, *Leucandra balearica*, Lac., n. var. *Linaresi*, *Ohalina oculata*, Bwk., *Tethya lyncurium*, J., *Halichondria panicea*, J.

HÆCKEL, E. Deep-sea *Ceratosa* of the 'Challenger.' J. R. Micr. Soc. 1890, pt. 3, No. 76, p. 343. Abstr. 'Challenger' Report (Zoology) xxi, pt. lxxxii, 1889, 92 pp. & 8 pls.

HANITSCH, RICHARD. Third Report on the *Porifera* of the L. M. B. C. District. P. Liverp. Biol. Soc. iv, 1890, pp. 192-238, pls. x-xv.

A list of all the Sponges found up to date in the district, showing the distribution of the species among the four parts in which they have been most carefully studied, viz., estuaries of Mersey and Dee, Isle of Man, North Wales, and Puffin Island. Total number of species, 56. Three new species are described; *Seiriola compacta* is redescribed; and the spiculation and skeleton of a number of other species are also described.

[*Vide infra*.]

HINDE, G. J. On a new genus of Siliceous Sponges from the Lower Calcareous Grit of Yorkshire. *Q. J. Geol. Soc.* xlv, pt. 1, pp. 54-61, pl. vi. Abstr. in *Ann. N. H.* (6) v (March), pp. 254 & 255.

Rhaxella perforata, n. g. & sp.

HOPE, R. Two new British Sponges. *J. R. Micr. Soc.* 1890, pt. 1, No. 74, p. 48. Abstr. of paper in *Ann. N. H.* iv, 1889, pp. 333-342, 1 pl.

KELLER, C. Sponge Fauna of Red Sea. *J. R. Micr. Soc.* 1890, pt. 2, No. 75, pp. 192. Abstr. of paper in *Z. wiss. Zool.* xlviii, 1889, pp. 34-405, 6 pls.

KEYES, CHARLES R. Review of the progress of American Invertebrate Palæontology for the year 1889. *Am. Nat.* xxiv, No. 278 (Feb., 1890), pp. 131-138.

Sponges included.

KINGSLEY, J. S. Record of American Zoology. *T. c.* No. 280 (April, 1890), pp. 351-357, and No. 285 (Sept., 1890), pp. 811-816.

Contains record of papers relating to Zoology of N. America, beginning with the year 1889. Sponges, pp. 352 & 812.

LENDENFELD, R. VON. (1) Die Lebenserscheinungen des Badeschwammes. *Zool. Gart.* xxxi, No. 4 (April, 1890), pp. 97-104.

A popular account of the anatomy, histology, physiology, and embryology of the bath Sponge.

——. (2) Eine Bemerkung über Synonomie und Nomenclatur. *Zool. Anz.* xiii, 1890, No. 329, pp. 115 & 116.

The author disputes Dendy's "accepted laws of priority," and explains the facts as to his genus and species *Thorecta exemplum*. Under *Thorecta exemplum*, var. *secunda*, he includes *Spongelia rectilinea*, var. *tenuis*, Hyatt, and *Stelospongos flabelliformis*, var. *lata*, Carter.

——. (3) Fortschritt unsrer Kenntniss der Spongien. *Zool. Jahrb.* v, Heft 1, 1890, p. 169. [Abth. f. Syst. Geogr. u. Biol. der Thiere.]

——. (4) Schlüssel zur Bestimmung der Spongiennadeln. *Biol. Centralbl.* x, Nos. 5 & 6 (1 May, 1890), pp. 131-135.

A key to the "Nomenclator Spiculorum," published by F. E. Schulze & von Lendenfeld in the *Abh. Ak. Berl.* 1889. Abstr. in *J. R. Micr. Soc.* 1890, pt. 4, No. 77, pp. 470 & 471.

——. (5) Bemerkung zu dem Schlüssel der Spongiennadeln. *Biol. Centralbl.* x, Nos. 17 & 18 (15 Oct., 1890), pp. 550 & 551.

A correction of some misprints in his "Schlüssel." *T. c.* pp. 131-135.

——. (6) Experimentelle Untersuchungen über die Physiologie der Spongien. *Biol. Centralbl.* x, No. 3 (20 March, 1890), pp. 71-81, and No. 4 (1 April, 1890), pp. 102-110.

A preliminary account of the work published by him under the same

title in the Z. wiss. Zool. xlviii, pp. 407-700, Taf. 26-40. For Abstracts of this paper, see also J. R. Micr. Soc. 1890, pt. 2, No. 75, pp. 190-192; Z. wiss. Mikr. vii. 1890, pp. 204-206; Humboldt, ix, Heft 4, pp. 116-120; Nature, xli, p. 570.

[LENDENFELD, R. VON.] (7) Das System der Spongien. Abh. Senck. Ges. xvi, Heft 2, pp. 361-439.

The same as that published in the Biol. Centralbl. ix, 4, pp. 113-127. [Vide Zool. Rec. 1889, *Spongia*, pp. 4-6.]

— (8) Monograph of the Horny Sponges (Review). Ann. N. H. (6) vi, 1890, p. 418, *et seq.*

— (9) Sponges attached to Crabs. Nature, xli, p. 317.

— (10) Die Gattung *Stelletta*. Abh. Ak. Berl. 1889 (1890), p. 75, 10 pls. Abstr. in J. R. Micr. Soc. 1890, pt. 6, No. 79, p. 730.

Consists of an introduction containing a diagnosis of the genus and a historical account of it, followed by a list of all the species of earlier writers, which the author looks upon as belonging to the genus *Stelletta*. An analytical portion containing detailed descriptions of 4 species. A synthetical portion describing the characteristics of the genus *Stelletta*; and finally a diagnosis of the Adriatic species of *Stelletta*. [Vide *infra*, Systematic.]

LO BIANCO, S. Metodi usati nella Stazione Zoologica per la Conservazione degli animali marini. MT. z. Stat. Neap. ix, Heft. iii, pp. 435, *et seq.*

Porifera, p. 445.

MAAS, OTTO. Ueber die Entwicklung des Süsswasserschwammes. Z. wiss. Zool. l (1890), Heft. 4, p. 527, Taf. xxii & xxiii. Abstrs. in J. R. Micr. Soc. 1890, pt. 6, No. 79, pp. 730 & 731, and in Am. Nat. xxiv, No. 288 (Dec., 1890), p. 1200; see also *op. cit.* No. 278 (Feb., 1890), p. 186.

[Vide *infra*, Embryology.]

MACKAY, A. H. Freshwater Sponges of Canada and Newfoundland. J. R. Micr. Soc. 1890, pt. 5, No. 78, p. 614. Abstr. of paper in Tr. Soc. Canada, Sec. iv, 1889, pp. 85-95, 1 pl.

MARCHAL, PAUL. L'Acide Urique et la Fonction Renale chez les Invertébrés. Mém. Soc. Zool. iii, pt. 1 (1889), pp. 33-87.

Sponges, Coelenterates, and Echinoderms, pp. 42 & 43. Uric acid has been sought for in these groups, but with negative results. [A *résumé* of all previous researches given. No new observations on Sponges.]

VON MARENZELLER, EMIL. Deutsche Benennungen für Poriferen, Coelenteraten, Echinodermen, und Würmer. Verh. z.-b. Wien, xl, Qrt. ii, 1890, pp. 177-184.

Sponges, p. 179.

6 Spong.

SPONGIÆ.

NOLL, F. C. Beiträge zur Naturgeschichte der Kieselschwämme.
1. *Desmacidon bosei*, Noll, mit Hinweisen auf *Craniella carnosa*,
Rüppel, und *Spongilla fragilis*, Leidy. Z. wiss. Mikr. vii, 1890,
pp. 497 & 498.

Account of the methods used and published in the paper in Abh. Senck.
Ges. xv, 1888.

PERRIER, EDMOND. Sur les services que l'Embryogénie peut rendre à la
Classification. C.R. Congrès Internat. Zool. Paris : 1889, pp. 179-
203.

Embryology of Sponges and Echinoderms discussed, pp. 181 & 182.
Five zoological series are to be recognised :—(1) Sponges ; (2) Polyps ;
(3) Echinoderms ; (4) Arthropods ; (5) Nephridiata (Nephridiés), com-
prising Rotifers, *Bryozoa*, *Brachiopoda*, Annelids, Platyhelminthes,
Molluscs, *Tunicata*, and *Vertebrata* (p. 187). Sponges and Polyps not to
be united as *Cœlenterata*, p. 188.

*POCTA, PHIL. Ueber einige Spongien aus dem Cuvieri-Pläner von
Paderborn. J. Geol. Ges. xlii, Heft 2, pp. 217-232.
26 species described, 7 of them new.

POTTS, E. Freshwater Sponges of Florida. J. R. Micr. Soc. 1890, pt. i,
No. 74, pp. 47 & 48. Abstract of paper in Tr. Wagner Inst. ii, 3 pp.
(separate copy).

SCHIMKÉWITSCH, WLADIMIR. Essai de Classification du Règne Animal.
Revue des Sciences Naturelles, publiée par la Société des Naturalistes
à St. Petersbourg (Owsjannikow) 1890, No. 2, pp. 61-65 & 102.

The Sponges are classified with *Cœlenterata* as *Radiata*. Their middle
germ-layer is not comparable either with mesoderm or mesenchyme, but
is a formation *sui generis* (parenchyme).

SCHULZE, F. E. Ueber die Bezeichnung der Spongiennadeln. Abh. Ak.
Berl. 1889 (1890), ii, pp. 1-35.

After a short introductory account of Sponge spicules and of the rules
according to which a system of nomenclature should be drawn up, a list
is given of names of spicules in five columns. The first column contains
the names of the spicules ; the second their definitions ; the third, facts
as to their distribution ; the fourth illustrations of spicules from par-
ticular Sponges, as examples of the names ; while column 5 has the name
of the Sponge from which the example is taken.

SOVINSKY, W. Sur les Spongillidæ du Dnièpre. Revue des Sciences
Naturelles, publiée par la Société des Naturalistes at St. Petersbourg
(Owsjannikow), 1890, No. 4, pp. 153-163 & 199.

A detailed description of 5 species (*Euspongilla lacustris*, Auct. ;
Spongilla fragilis, Leidy ; *Ephydatia fluviatilis*, Auct. ; *Ephydatia mülleri*,
Lieberkühn ; *Trochospongilla erinaceus*, Ehrenberg), more or less character-
istic of the Dnièpre, near Kiev.

STEWART, WILLIAM. Exhibit of specimen of *Euspongia officinalis* var. ? from Florida. P. N. H. Soc. Glasg. ii (n.s.), pt. ii, 1890, p. 1.

TOPSENT, E. (1) Notice préliminaire sur les Spongiaires recueillis durant les campagnes de l'Hirondelle. 1^{er} Article. Bull. Soc. Z. Fr. xv, No. 2 (Feb., 1890), pp. 26-32.

In the three voyages, 163 species of Sponges were collected, of which 54 were new to science. In the expedition to the Azores, 118 Sponges were collected, of which 37 were new. The following are the Sponges found, which deserve special mention :—

HEXACTINELLIDA.—*Asconema setubalense*, S. K., coasts of Asturias, 300 mètres ; and not far from Terre Neuve, 1267 mètres. *Farrea occa*, Crtr., and *Aphrocallistes ramosus*, Schulze, near Azores, 927 mètres. At the Azores in 1888 were taken 12 species, among which were *Rhabdodictya delicatum*, O. S., and *Hertwigia falcifera*, O. S., besides 3 new species.

TETRACTINELLIDA.—*Stryphnus ponderosus*, Bwk., *Stelletta collingsii*, Bwk., and *Cydonium glariosium*, Soll., from coasts of Asturias. Also *Dragmastra normanni*, Soll., *Sphinctrella ornata*, Soll., *S. horrida*, O. S., *Calthropella simplex*, Soll., *Erylus transiens*, Crtr., *Isops globa*, O. S., *I. pachydermata*, Soll., *Stryphnus fortis*, Vosm., *Pæcillaster crassiusculus*, Soll. ; new species of *Thenea* and *Craniella*, and *Pachastrella abyssi*, O. S.

LITHISTIDA.—*Macandrewia azorica*, Crtr., 454 mètres ; *Azorica pfeifferæ*, Crtr., 454 mètres ; *Racodiscula clava*, O. S., 736 mètres ; *Siphonidium ramosum*, 736 mètres : all from Azores.

GUMMINEÆ.—*Chondrilla nucula*, O. S., *Chondrosia plebeia*, O. S., Azores, 736 mètres.

MONAXONIDÆ.—106 species, 45 new. Interesting forms are—*Esperella placoides*, Crtr., near Terre Neuve, 1267 mètres, = *E. murrayi*, R. & D., *Axinella egregia*, Ridl., from N. coast of Spain, 134 mètres. Numerous specimens of *Tentorium semisuberites*, O. S., *Esperella lingua*, Bwk., *Melonanchora elliptica*, Crtr., *Axinella erecta*, Crtr., *Trichostemma sarsii*, R. & D., *Suberites caminatus*, R. & D. From the Azores—*Rhizochalina fistulosa*, Bwk., *Desmacidon tunicata*, O. S., *Suberotelites mercator*, O. S., *Latrunculia cratera*, Boc., *Plocamia coriacea* var. *elegans*, R. & D., *Hymenaphia viridis*, Tops., &c.

The new genera and species of *Monaxonida* are then described [*vide infra*, Systematic].

— (2) Notice préliminaire sur les Spongiaires recueillis durant les campagnes de l'Hirondelle (2^{ième} Article). Bull. Soc. Z. Fr. xv, No. 2 (Feb., 1890), pp. 65-71.

Continues the description of new Sponges, *Monaxonida*, *Tetractinellida*, and *Hexactinellida* [*vide infra*, Systematic].

— (3) Éponges de la Manche. Mém. Soc. Zool. iii, pts. 2 & 3, 1890, pp. 195-205.

9 species to be added to his former lists : *Tethyspira spinosa*, n. g. (*Tethea spinosa*, Bwk.), *Axinella* (*Isodictya*) *dissimilis*, Bwk., *Reniera* 1890. [VOL. XXVII.] g 6

peachii, Bwk., *Suberites sulphurea* (Bean), Gray, *S. tenuicula* (Bwk.), Crtr., *Microciona spinosus*, Crtr., *M. strepsitoxa*, Hope, *Spanioplon armatura*, Bwk., *Aplysilla sulphurea*, F. E. S. A general list is given of Sponges collected at the zoological station of Luc, pp. 200-202. This list, with Bowerbank's Sponges, makes up 111 species in the Channel; 44 of these have not been found since Bowerbank. To these species must be added others, known since Bowerbank's work to inhabit the Channel, which bring up the list to 144 species; to which must be added further several Mediterranean Sponges and others, altogether 25 more species.

[TOPSENT, E.] (4) Étude de Spongiaires. Rev. Biol. ii, No. 8 (May, 1890), pp. 289-298, 2 figs. in the text.

I. Observations on some species of the genus *Raspailia*, Nardo. II. Description of a soft Lithistid (*Kaliapsis permollis*, n. g. & sp.), from La Reunion (pp. 294-296, & woodcut). III. Frequent breaking away of the walls of the efferent canals of *Pachymatisma johnstonia*, Bwk. [Vide *infra*.]

— (5) Sur la Distribution Geographique de quelques *Microsclerophora*. Bull. Soc. Z. Fr. xv, No. 10 (Dec., 1890), pp. 231-233.

1. *Placina monolopha*, F. E. S., from Trieste, Lesina, Naples, and Roscoff. 2. *P. dilopha*, F. E. S., from Trieste and Baudol, Mediterranean Coast of France. 3. *P. trilopha*, F. E. S., Naples and Baudol. 4. *Corticium candelabrum*, O. S., at Sebenico, Lesina, Naples, Cebu, and Ponapé.

— (6) Contribution à l'Étude des Clionides. Arch. Z. expér. v bis, Supplémentaire (1887-1890), Mém. iv, pp. 1-165, pls. i-vii.

The work consists of a historical introduction and three parts. The first part treats of the Boring Sponges (*Clionidæ*) and is subdivided into three chapters, containing respectively: Anatomical and histological studies of certain *Clionæ*, observations on their biology, and a revision of the family *Clionidæ*, with descriptions of 5 new species. In the second part the *Renierinæ* are anatomically and systematically studied. In the third part the affinities of the *Clionidæ* are discussed. Finally, in an appendix, is given a list of the Sponges of the zoological station of Luc, with descriptions of 4 new species, and notes on the time of breeding. [Vide *infra*.]

— (7) Additions à la Faune des Spongiaires de Luc. Bull. Soc. L. Norm. (4) iii, pp. 53-60.

VOSMAER, G. C. J. (1) Note on the Metamorphosis of the Sponge larva. Tijdschr. Nederl. Dierk. Ver. (2) ii, Afl. 4, pp. 287-289, pl. xiv. Abstr. in J. R. Micr. Soc. 1890, pt. 2, No. 75, p. 193.

[Vide *infra*, Embryology.]

— (2) Notes on some Species of *Stelletta* and other Genera allied to it. Tijdschr. Nederl. Dierk. Ver. (2) iii, Afl. 1, pp. 35-37.

[Vide *infra*, Systematic.]

WEBER, MAX. *Spongillidæ* des Indischen Archipels. Zool. Ergebnisse einer Reise in Niederländisch Ost-Indien, Heft. 1, pp. 30-47, 1 pl.

4 new species described.

WHITELEGGE, THOMAS. List of the Marine and Freshwater Invertebrate Fauna of Port Jackson and the Neighbourhood. J. R. Soc. N.S.W. xxiii, pt. 2 (1889), pp. 163-323.

Sponges, pp. 178-187.

WOOLMAN, LEWIS. Marine and Freshwater Diatoms and Sponge Spicules from the Delaware River Clays of Philadelphia. P. Ac. Philad. 1890, pt. 2 (April-Sept.), pp. 189-191.

Many of the spicules were "of the pin-head forms characteristic of salt water."

ZYKOFF. (1) Einiges über die Spongilliden der Umgegend von Moskau. Zool. Anz. xiii (1890). No. 342.

— (2) Notice sur les Spongillides des Environs de Moscou. Bull. Mosc. 1890, No. 1, pp. 170-172.

Occurrence of *Spongilla lacustris*, Carter, and *Ephydatia fluviatilis*, auct., in the neighbourhood of Moscow.

ANATOMY, HISTOLOGY, MORPHOLOGY, AND PHYLOGENY.

CHATIN has studied the cell nucleus in *Leucosolenia coriacea*, *Ascandra variabilis*, *Sycandra ciliata*, *Pencillaria mammillaris*, and *Microciona armata*. The shape of the nucleus varies, but it is rarely branched. The nuclear membrane is often very visible. The interior of the nucleus is formed of a plasmatic substance, in which the nuclein is arranged either in fragments or in filaments aggregated towards the border of the nucleus, or in irregularly scattered nucleoli. In its morphographic character the Sponge nucleus resembles that of *Protozoa*.

DENDY (1) describes the anatomy of a number of Chalinine Sponges, and points out this family is interesting—(1) because they afford excellent illustrations of the great variability in external form to which Sponges living in shallow water, or comparatively shallow water, are subject; and (2) because they illustrate in a very striking way the manner in which the siliceous spicules gradually degenerate, and ultimately vanish as the horny skeleton becomes more and more strongly developed. Hence, it is impossible to draw a sharp line of distinction between *Chalininae* and the so-called *Keratosa*.

DENDY (2) asserts, against Von Lendenfeld, the existence of "Sollas's membrane," which he could easily distinguish in *Stelospongos flabelliformis*, Carter. The author then disputes Polejæff's view, that the idea of a close relationship between *Keratosa* and *Homorhaphidæ*, esp. *Chalininae*, must be abandoned, and that the horny Sponges are a palæontologically ancient group. In the genus *Siphonochalina* there is a well marked

gradation, showing how a siliceous skeleton with scarcely any spongin may be replaced by a horny skeleton with only a trace of spicules. Hence, it can scarcely be doubted that some horny Sponges, at least, are descendants of siliceous *Chalininae*.

FOL finds that the filaments of *Hircinia* are an integral part of the Sponge. They arise from bands of fusiform cells, evidently belonging to the connective tissue of the Sponge, which atrophy after producing the fibril.

VON LENDENFELD (10) gives a description of the chones in the genus *Stelletta* (pp. 61 & 62).

PERRIER & SCHIMKÉWITSCH discuss the zoological position of Sponges as a class, arriving at very opposite conclusions.

TOPSENT (4) has found that in cutting specimens of *Pachymatisma johnstonia*, Bwk., it was often possible to dissect away and extract from the large efferent canals a ramified system of whitish tubes, opening to the interior by as many openings as the specimen had oscula. This was due to a partial breaking away of the walls of the efferent canals.

TOPSENT (6) describes very thoroughly the anatomy and histology of some species of the genus *Cliona*, and of a number of *Renierinae* belonging to the genera *Reniera*, *Amorphina*, and *Dendoryx*. In all these forms he finds four kinds of cellular elements:—(1) Contractile cells, under which category are to be included the elements which have been termed cells of the ectoderm and endoderm, fibrous cells, or contractile mesoderm cells. These cells clothe the walls of the canals and occupy all points where alternate contraction and relaxation is necessary. Where this is not the case they may be replaced by a cuticle. (2) Vibratile cells (collared cells); in *Cliona* the cells are united to one another by their collars. (3) Connective tissue cells, actively amœboid, and united to neighbouring cells by their pseudopodia. They often contain reserve material. (4) Pigmented digestive cells, which are amœboid and ingest food particles; these are also the reproductive cells, and become ova or spermatozoa. (1) and (2) constitute the ectoderm and endoderm, (3) and (4) the mesoderm. The author has also observed these four kinds of cell elements in other siliceous Sponges (p. 122), and believes that all Silicosponges have the same histological composition.

Cliona celata is investigated in its three forms, the boring, incrusting, and raphyroid (= *Raphyrus griffithsii*, Bwk.). The author finds in the genus *Cliona*, typically, three kinds of spicules, for which Bowerbank's terms, "essential skeletal spicula," "tension spicula," and "spicula of the membranes" are used. Only one or two of these three kinds may be present. Use is made of their modifications for sub-dividing the genus *Cliona*. [*Vide infra*, Systematic.]

After a summary of former views as to the affinities of the *Clionidæ*, the author concludes that they are true *Corticatæ*, and form in this group a natural family of equal importance with *Tethyadæ*, *Ancorinæ*, or *Geodiæ*.

The author considers pores and oscula as essentially similar structures, and disagrees with the view that in a Sponge with many oscula, each osculum is the sign of a *Spongozoon*. Description of spermatozoa of *Reniera simulans*, p. 103 ; of *Amorphina panicea* and *coalita*, p. 112.

EMBRYOLOGY.

DELAGÉ finds that in the larva of *Esperella* the ciliated cells do not constitute the superficial layer of the body, but they are covered by an external layer of cells, representing the ectoderm, which are much larger than the ciliated cells, and rounded. These ectoderm cells do not touch one another but form a discontinuous layer. The central mass of the larva is formed of scleroblasts, connective tissue cells, and large cells with a clear nucleus, the mother cells of the chambers. The ciliated cells represent the endoderm. They travel to the interior and clothe the canals. The chambers are not endodermic, but formed in the manner of schizocoelic lacunes, lined by mesoderm. The larva fixes itself by any point of the surface of the body.

The larva of a siliceous Sponge may be compared to that of a Sycon, in which the ectoderm, instead of being localized at one pole, is spread as a thin discontinuous layer over the ciliated cells. The endoderm cells, instead of being invaginated *en masse*, leave the surface singly.

DENDY (3) describes the pseudogastrula stage in *Grantia labyrinthica*, = *Teichonella labyrinthica*, Carter. The embryo lies in a cavity in the maternal tissues, which is lined by a distinct layer of flattened endothelium, and is situated in the thin layer of mesoderm between the ciliated chamber and the spicules. The embryo is so placed that the ovoid granular cells are turned towards the spicules, and the columnar endoderm towards the flagellated chamber. As the embryo grows, it causes the collared epithelium of the chamber to bulge out into the flagellated chamber, and form a kind of blister. The opposite side of the embryo, turned towards the layer of spicules, becomes flattened. In the youngest embryos (fig. 1) the ovoid granular cells form a single layer, and the segmentation cavity contains finely granular, gelatinous-looking tissue, in which are visible nuclei, probably mesodermal, but of uncertain origin. As development goes on, the granular cells proliferate rapidly, and occupy more space, and hence, as they cannot project outwards, owing to the rigid layer of spicules beneath them, they become invaginated, and give rise to the pseudogastrula. The pseudogastrula is thus due to a mechanical invagination of the layer of granular cells caused by their active growth, and the peculiar situation of the embryo. These cells now form a layer several cells thick. The embryo is now set free by the rupture of the wall of the flagellated chamber. The segmentation cavity is at this stage reduced to a mere slit, but when set free the embryo becomes nearly spherical, and the granular cells form a hemispherical mass composed of (1) an external single layer of clearer cubical cells ; (2) an internal mass of granular cells, more or less polygonal from mutual

pressure (fig. 5). The internal mass (2) is believed by the author to represent a supply of food enabling the larva to wander for a long distance without becoming fixed, and to have nothing to do with mesoderm, which arose much earlier, and though hidden by the later-formed food-yolk, is doubtless still there, giving rise to the spicules observed by Metschnikoff.

MAAS describes the development of the freshwater Sponge. The ovum is full of yolk granules. The segmentation, which takes place within the maternal follicle, is total and regular, leading to the formation of a morula of about sixty-four cells. The internal cavity of the embryo arises as a sinking-in at one pole of the morula, when its cells are still similar in structure to the ovum. Rapid cell division, accompanied by differentiation of the tissues, then takes place. The peripheral cells of the embryo become columnar ectoderm cells, arranged in an epithelium. The cavity of the embryo is lined by a distinct layer of cubical endoderm cells, heaped together in some places, and in others sending processes into the inner mass of mesoderm cells, to form the rudiments of the flagellated chambers. The mesoderm consists of (1) large cells still containing yolk; (2) cells without yolk, resembling later connective tissue cells; (3) scleroblasts. As the embryo grows, (1) gradually disappear, and the ground substance appears, perhaps secreted intracellularly. The flagellated chambers arise by further differentiation of the endoderm cells lining the cavity. The ectoderm cells acquire flagella, and the larva is set free. It swims with the pole of the cavity directed forwards. It has a well-differentiated mesoderm, and flagellated chambers lined by collar cells opening into the central cavity, but there are no pores or oscula.

The larva fixes by the pole of the cavity, and becomes flattened out into a crust. The ectoderm cells flatten out and lose their flagella, and then become amœboid, and throw out pseudopodia at the margins of the Sponge, but still remain perfectly continuous, with the general ectoderm covering all the tissues and the spicules. The play of the pseudopodia gradually ceases, and at the same time the inhalent canals arise by dipping of the ectoderm to meet the flagellated chambers, which have been brought near the surface by the flattening of the Sponge. The osculum arises as a breaking through of the primitive cavity of the embryo to the interior. The primitive cavity becomes the exhalent system.

TOPSENT (6) describes in *Cliona vastifica* a method of reproduction by means of gemmules (p. 52). The author also has observations on the embryos of *Reniera rosea* (pp. 99, *et seq.*), *R. simulans* (p. 104), *Amorphina panicea* (p. 112), *Dendoryx dujardini* (pp. 116, *et seq.*). In *Reniera* the embryos acquire, before the appearance of the cilia, a cap of pigment at one pole, which is wanting in the embryos of the genera *Amorphina* and *Dendoryx*. In the appendix, the author notes the breeding season of many of the Sponges to be found at the zoological station of Luc, and gives a list of the Sponges which set free their embryos in each month from June to October inclusive.

VOSMAER (1) has observed the larva and metamorphosis of a Sponge, probably belonging to the genus *Myxilla*. The larva consists of a "cœnoblastem" covered by flagellated epithelium, except on a region comprising about $\frac{1}{7}$ th to $\frac{1}{8}$ th of the surface, where it is covered by cubical non-ciliated cells. Under the flagellated cells are some layers of minute rounded cells. Under the cubical cells are gland cells, sending processes up between the epithelial cells. The larva fixes itself at the non-ciliated region by the help of the secretion of the gland cells. The flagellated epithelium changes into a flat pavement epithelium, and is not thrown off. Gland cells, similar to those which fixed the larva, secrete the slime covering the surface of the adult Sponge. Fissures arise in the central mass, forming the subdermal cavities and ciliated chambers. After this the spicules arrange themselves in bundles, and the first traces of spongin become visible.

PHYSIOLOGY.

MARCHAL (nothing new).

TOPSENT (6) finds that in *Clionidæ* and other Silicosponges, food-particles are ingested by amœboid digestive cells, which emit lobose pseudopodia, and can take in even whole diatoms. When a *Cliona* is fed with suspended carmine, the digestive cells ingest a great quantity of granules; the vibratile (collared) cells ingest none.

The author also discusses the irritability and vitality of *Clionæ*. A lowering of temperature to 0° C., causes them to contract their papillæ energetically, to open them again when the temperature rises. Their vitality is very great.

BIOLOGY.

MAAS describes the swimming of larvæ of *Spongilla* in a screw-like manner through the water (p. 538), and their marked avoidance of light (p. 539).

TOPSENT (6) attacks the problem as to how a *Cliona* is able to perforate shells, stones, &c. To throw light on this question he makes a careful study of an oyster-shell perforated by the Sponge. He finds that the calcareous matter is removed in little pieces, of which the newly-exposed surface is rounded. Layers of conchiolin are no obstacle to the progress of the Sponge, which removes the conchiolin in little polygonal prisms, of the same height as the thickness of the layer if it be thin; but if the conchiolin form a thick layer, it is removed in the same manner as the calcareous matter. The fact that the Sponge perforates conchiolin as easily as lime leads the author to doubt the use of an acid in effecting the excavations. No indications of any special means of perforation could be found in the borings of the *Cliona*. The surface of the Sponge in contact with the excavations is bounded by a continuous layer of contractile (*i.e.*, ectoderm) cells in the normal manner, and the greenish-

yellow filaments in the calcareous matter, supposed by Nassonow to be prolongations of the Sponge-body, are shown to be vegetable parasites, having no connection with the Sponge. The author then reviews and criticizes the hypotheses of earlier writers on this subject, arriving only at negative conclusions himself.

The author further discusses the harmful effects of the *Cliona* on oyster culture, and how oysters may be protected against them. Since the Sponge only attacks oysters of more than two years growth, it is suggested that a sort of filter of old shells should be placed at the entrance of the tanks in which the oysters are placed to ripen in the months of September and October, to attract and arrest Sponge-embryos. Further, that the oysters should be examined frequently, and infected specimens plunged into fresh water to kill the Sponge, care being taken to make the oyster close its shell first.

DISTRIBUTION

IN SPACE AND TIME.

See V. DALLA TORRE, DENDY (1) (*Chalinina*), GAUDRY, GIARD, HANITSCH, HINDE, POČTA, SOVINSKY (*Spongillidæ*), TOPSENT (1), TOPSENT (2), TOPSENT (3), TOPSENT (4), TOPSENT (5) (*Microsclerophora*), TOPSENT (6), TOPSENT (7), WEBER (*Spongillidæ*), WHITELEGGE, ZYKOFF (*Spongillidæ*).

METHODS OF PRESERVATION, INVESTIGATION, ETC.

See LO BIANCO, pp. 445, *et. seq.*, CHATIN, p. 889, MAAS, pp. 529-531, NOLL, pp. 497 & 498, VOSMAER (1).

SYSTEMATIC.

I. CALCAREA.

New species :—

Leucaltis impressa, n. sp., HANITSCH, pp. 234-236, pl. xv, fig. 3.

Leucandra balearica, Lac., n. var. *Linaresi*, GIARD, p. 71, footnote.

DENDY (3) finds that *Teichonella labyrinthica*, Carter, is a true *Sycon*, and terms it provisionally *Grantia labyrinthica*.

GIARD finds that *Ascandra variabilis* is distinct from *A. contorta*, and not identical, as Barrois supposed.

II. HEXACTINELLIDA.

New species :—

Chonelasma schulzei, n. sp., TOPSENT (2) p. 70.

Hexactinella grimaldii, n. sp., *id.* (2) p. 71.

Periphragella lusitanica, n. sp., *id.* (2) p. 70.

III. TETRACTINELLIDA, MONAXONIDA, KERATOSA, AND MYXOSPONGIÆ.

(a) New or emended genera :—

Ancorina to be retained provisionally ; VOSMAER (2).

Biemma, Gray, 1867, emend. TOPSENT, (1) p. 32, for *Halichondria inornata*, Bwk., *H. corrugata*, Bwk., and 3 new species.

Dendoryx, Gray, emend. TOPSENT (6), to include *Dendoryx incrustans*, Gray (type) ; *Hymeniacidon dujardini*, Bwk.

Euryphyllæ, Duch. & Mich. to be suppressed ; TOPSENT, (6) p. 90.

✓ *Joyeuxia*, n. g., TOPSENT, (1) p. 29, for *J. viridis*, n. sp.

✓ *Kaliapsis*, n. g., *id.* (4) pp. 294–296, with woodcut, for *K. permollis*, n. sp.

Penares, Gray, has the priority over *Papyrula*, O. S., to which Sollas referred *Stelletta helleri*, O. S. This Sponge must therefore stand as *Penares helleri*, O. S. ; VOSMAER (2).

✓ *Pytheas*, n. g., TOPSENT, (1) p. 31, for *P. atra*, n. sp.

✓ *Rhabderamia*, n. g., *id.* (1) p. 28, for *Microciona pusilla*, Carter, *M. interta*, Carter, and a new species [*vide infra*].

✓ *Rhaxella*, n. g., HINDE, for a new fossil species, *R. perforata*.

✓ *Sarcomus*, n. g., FOL, for *S. georgi*, n. sp.

✓ *Spanioplion*, n. g., TOPSENT, (1) p. 31, for *Hymeniacidon armatura*, Bwk., *Isodictya trunca*, Bwk., and a new species, *S. fertilis*.

Stelletta, emend. VON LENDENFELD (10), to include :—

Ancorina fibrosa, O. S.

Ancorina simplicissima, O. S.

Anthastra æruginosa, Sollas.

Anthastra communis, Sollas.

Anthastra mammilliformis, Sollas.

Anthastra parvispicula, Sollas.

Anthastra pulchra, Sollas.

Anthastra pyriformis, Sollas.

Anthastra ridleyi, Sollas.

Anthastra vosmæri, Sollas.

Astrella anceps, Sollas.

Astrella pumex, Sollas.

Aurora globostellata, Sollas.

Aurora reticulata, Sollas.

Collingsia schmidtii, Gray.

Dragmastra normani, Sollas.

Ecionema coactura, Bwk.

Myriastra ? *Anthastra* ? *tethyopsis*, Sollas.

Myriastra clavosa, Sollas.

Myriastra clavosa var. *quadrata*, Sollas.

Myriastra crassicaula, Sollas.

Myriastra simplicifurca, Sollas.

Myriastra simplicissima, Sollas.

Myriastra subtilis, Sollas.

Myriastra toxodonta, Sollas.

Pilochrota anancora, Sollas.

Pilochrota cingalensis, Sollas.

Pilochrota crassispicula, Sollas.

Pilochrota fibrosa, Sollas.

Pilochrota gigas, Sollas.

Pilochrota haeckelii, Sollas.

Pilochrota lactea, Sollas.

Pilochrota lendenfeldii, Sollas.

Pilochrota mosleyi, Sollas.

Pilochrota pachydermata, Sollas.

Pilochrota purpurea var. *longan-cora*, Sollas.

Pilochrota tenuispicula, Sollas.

Tethya schmidtii, Bwk.

Together with numerous species of *Stelletta*, described by Schmidt, Ridley, Sollas, Carter, and Marenzeller.

Stryphnus, Sollas, emend. VOSMAER (2), to include *Stelletta mucronata*, O. S.

† *Tethyspira*, n. g., TOPSENT, (3) pp. 195–197, for *Tethea spinosa*, Bwk.

† *Thorecta*, Von Lndfld., see DENDY (2) and VON LENDENFELD (2).

† *Yvesia*, n. g., TOPSENT, (1) p. 29, for *Halichondria albula*, Bwk., *Sclerilla dura*, Hansen, *S. arctica*, Hansen, and 8 new species [*vide infra*].

VON LENDENFELD (10) gives a diagnosis of the genus *Stelletta* and its characteristics.

TOPSENT (6) gives definitions of the genera *Dendoryx*, *Amorphina*, and *Reniera* (pp. 120 & 121). He divides the genus *Cliona* into *Euclionæ* and *Paraclionæ*. In the former the three kinds of spicules, or as many of them as may be present, retain their typical form; in the latter, one of them is modified in form.

(b) New, emended, or redescribed species.

Amorphina connexa, ? n. sp., an *Amorphina angulata typica*; TOPSENT, (6) pp. 144 & 145, pl. vi, fig. 15. The author concludes that: (1) either there is a single species, *Amorphina angulata*, of which Bowerbank's two species (*Halichondria angulata* and *H. couchii*) are varieties; or, (2) there are three distinct species—*Amorphina angulata*, *A. couchii*, and *A. connexa*, n. sp.

Amphilectus incrustans, Johnston; for description of spiculation and skeleton, see HANITSCH, p. 205.

Artemisina transiens, n. sp., TOPSENT, (2) p. 66.

Azinella mammillata, n. sp., HANITSCH, pp. 209–212, pl. x, figs. 3–5.

Biemma grimaldii, n. sp., TOPSENT, (1) p. 32.

Biemma chevreuxii, n. sp., *id.* (1) p. 32.

Biemma dantzenbergi, n. sp., *id.* (1) p. 32.

Chalina gracilenta, Bwk., and *C. montagui*, Johnston; for descriptions of spiculation and skeleton, see HANITSCH, pp. 200 & 201.

Characella sollasii, n. sp., TOPSENT, (2) p. 70.

Clathria seriata, Johnston; for description of skeleton and spiculation see HANITSCH, p. 207.

Cliona carpenteri, Hancock; for description see TOPSENT, (6) p. 77, pl. vii, fig. 4.

Cliona celata, Grant; for full description see TOPSENT, (6) pp. 18–44, pl. vii, fig. 1, &c. For description of spicules and skeleton, see HANITSCH, pp. 217 & 218, pl. xi, fig. 2, and pl. xii.

Cliona euryphyllæ, n. sp., TOPSENT, (6) p. 82, pl. vii, fig. 5; perhaps identical with *Euryphyllæ latens*, Duch. & Mich.; *loc. cit.* p. 90.

Cliona gracilis, Hancock; for description see TOPSENT, (6) p. 77.

Cliona labyrinthica, Hancock; for description see TOPSENT, (6) p. 79.

Cliona leseurei, n. sp., TOPSENT, (6) p. 80, pl. vii, fig. 8.

Cliona lobata, Hancock; for description see TOPSENT, (6) pp. 57–59, pl. vii, fig. 2.

Cliona michelini, n. sp., TOPSENT, (6) p. 79, pl. vii, fig. 7.

Cliona millepunctata, Hancock; for description see TOPSENT, (6) p. 78.

Cliona quadrata, Hancock; for description see TOPSENT, (6) pp. 78 & 79.

- Cliona thoosina*, n. sp., TOPSENT, (6) p. 80, pl. vii, fig. 6.
- Cliona vastifica*, Hancock, emend. TOPSENT, (6) pp. 46-57, pl. vii, fig. 3 ; to include *C. vastifica*, Hancock, and *C. northumbrica*, Hancock.
- Cliona gorgonoides*, Hancock, and *Cliona linearis*, Sollas, to be classed as varieties of *Cliona celata*, Grant, see TOPSENT, (6) p. 76.
- Dendoryx pectinata*, n. sp., TOPSENT, (2) p. 66.
- Desmacella aberrans*, n. sp., *id.* (2) p. 67.
- Epallax incrustans*, n. sp., *id.* (2) p. 68.
- Ephydatia fluviatilis*, auct., and *E. mülleri*, Lieberkühn ; for description see SOVINSKY.
- Erylus nummulifer*, n. sp., TOPSENT, (2) p. 70.
- Esperella floream*, Bwk.; for description of spiculation and skeleton see HANITSCH, pp. 202 & 203.
- Esperiopsis columnata*, n. sp., TOPSENT, (2) p. 67.
- Esperiopsis polymorpha*, n. sp., *id.* (2) p. 67.
- Esperiopsis prædita*, n. sp., *id.* (2) p. 67.
- Euspongilla lacustris*, auct.; for description see SOVINSKY.
- Forcepia versatilis*, n. sp., TOPSENT, (2) p. 66.
- Gellius macrosigma*, n. sp., *id.* (2) p. 65.
- Halichondria leuconoides*, n. sp., *id.* (2) p. 65.
- Halisarca rubra*, n. sp., HANITSCH, pp. 196 & 197, pl. x, figs. 1 & 2.
- Hymedesmia zetlandica*, Bwk.; for description see TOPSENT, (6) pp. 142 & 143.
- Hymeraphia minax*, n. sp., *id.* (6) pp. 141 & 142, pl. vi, fig. 17.
- Hymeraphia tuberosocapitata*, n. sp., *id.* (2) p. 68.
- Joyeuxia viridis*, n. g. & sp., *id.* (1) p. 29.
- Kaliopsis permollis*, n. g. & sp., *id.* (4) pp. 294-296, with woodcut.
- Latrunculia insignis*, n. sp., *id.* (2) p. 69.
- Myxilla pecqueryi*, n. sp., TOPSENT, (2) p. 67.
- Pachastrella debilis*, n. sp., *id.* (2) p. 70.
- Pachychalina variabilis*, n. sp., DENDY, (1) p. 353, pl. lviii, fig. 3, pl. lx, fig. 2.
- Phakellia hironellei*, n. sp., TOPSENT, (2) p. 65.
- Plumohalichondria atrasanguinea*, Bwk.; for description of skeleton and spiculation see HANITSCH, pp. 209 & 210.
- Plumohalichondria dendyi*, n. sp., TOPSENT, (2) p. 68.
- Pytheas atra*, n. g. & sp., *id.* (1) p. 31.
- Raphiodesma aculeatum*, n. sp., *id.* (6) p. 152, pl. vi, fig. 14.
- Raspailia*. TOPSENT (4) finds that *R. viminalis*, O. S., is not identical with *L. ventilabrum*, Bwk., as supposed by Hanitsch, or with *R. hispida*, Bwk., as supposed by Schmidt ; but that the three species are quite distinct. Further, that *R. fascicularis*, Bwk., is quite distinct from *R. stelligera*, O. S., with which Oscar Schmidt had identified it. But *R. stelligera*, O. S., is identical with *R. stuposa*, Montague. Bowerbank confounded under *R. stuposa*, two quite distinct Sponges, viz., *R. stuposa*, Mont., and *R. rigida*, Mont. The latter name must be resuscitated for the Sponge

termed *R. stelligera*, O. S., by Hanitsch. The author gives the following list of species :—

R. stuposa, Mont., = *Dictyocylindrus stuposus*, Bwk.; *R. rigida*, Mont., = *R. stelligera*, Hanitsch; *R. fascicularis*, Bwk. (*Dictyocylindrus fascicularis*, Bwk.); *R. ventilabrum*, Bwk. (*Dictyocylindrus ventilabrum*, Bwk.), = *R. viminalis*, Hanitsch; *R. hispida*, Mont. (*Dictyocylindrus hispidus*, Bwk.); *R. viminalis*, O. S.

Raspailia (*Syringella*) *falcifera*, n. sp., TOPSENT, (6) p. 152, pl. vi, fig. 14.

Reniera filholi, n. sp., *id.* (2) p. 65.

Reniera ingalli, Bwk.; for description of skeleton and spiculation see HANITSCH, p. 199.

Reniera viscosa, n. sp., TOPSENT, (6) p. 149.

Rhabdocræmia guernei, n. g. & sp., *id.* (1) p. 28.

Rhaxella perforata, n. g. & sp., HINDE.

Sarcomus georgi, n. g. & sp., FOL, p. 1209.

Seiriola compacta, Hanitsch; for redescription see HANITSCH, pp. 221–227, pl. xiii, figs. 1–4. It turns out to be a Stellettid, which was incrustated by a Suberites, and belongs to the subfamily *Sanidasterinae* of the *Stellettidae*.

Siphonochalina ceratosa, n. sp., DENDY, (1) pp. 356 & 357, pl. lviii, figs. 1, 1a, & pl. lxii, fig. 2.

Siphonochalina procumbens, Carter; for description see *id.* (1) p. 355, pl. lviii, fig. 4, & pl. lxii, fig. 1.

Siphonochalina spiculosa, n. sp., *id.* (1) p. 354, pl. lviii, figs. 2, 2a, & pl. lxii, fig. 3.

Spanioplion fertilis, n. g. & sp., TOPSENT, (1) p. 31.

Spinosella plicifera, Duch. & Mich.; for description see DENDY, (1) p. 363, pl. lviii, fig. 5, & pl. lx, fig. 1.

Spinosella maxima, n. sp., *id.* (1) p. 365, pl. lxi.

Spinosella sororia, Duch. & Mich.; for description see *id.* (1) p. 360, pl. lviii, fig. 7, & pl. lix, fig. 1.

Spinosella sororia, Duch. & Mich.—

(a) n. var. *dilatata*, DENDY, (1) p. 361, pl. lviii, fig. 6, & pl. lxiii, fig. 2.

(b) n. var. *fruticosa*, *id.* (1) p. 361, pl. lix, fig. 3.

(c) n. var. *elongata*, *id.* (1) p. 362, pl. lxiii, fig. 1.

Spinosella velata, n. sp., *id.* (1) p. 366, pl. lix, fig. 2.

Spirastrella aculeata, n. sp., TOPSENT, (2) p. 69.

Spongilla fragilis, Leidy; for description see SOVINSKY.

Stelletta :—

VON LENDENFELD (10) gives full descriptions of the following species :—

1. *S. grubei*, O. S., under which is included *S. grubei*, O. S., *S. collingsii*, (Bwk.), Sollas, *Tethya schmidtii*, Bwk., *Collingsia sarneensis*, Gray, *Stelletta anceps*, O. S. (*Astrella anceps*, Sollas).

2. *S. dorsigera*, O. S. (*Astrella dorsigera*, Sollas), including *Stelletta grubei*, Marenzeller.

3. *S. boglicii*, O. S., including *S. grubei*, Marenzeller, *Ecionema coactura*, Bwk.
4. *S. pumex*, O. S. (*Astrella pumex*, Sollas).
5. *S. hispida*, Buccich.

The author gives a diagnosis of the Adriatic species.

VOSMAER (2) agrees with Marenzeller as to the specific identity of *Stelletta dorsigera*, O. S., with *S. grubei*, O. S., and of *S. boglicii* with *S. anceps*. *S. mucronata*, O. S., may be identical with *S. carbonaria*, O. S.; but, in any case, it does not belong to the genus *Stelletta*, but to the genus *Stryphnus*, Sollas.

Suberites domuncula, Ndo.; for description of skeleton and spiculation see HANITSCH, p. 215.

Suberotelites demonstrans, n. sp., TOPSENT, (2) p. 69.

Tetilla truncata, n. sp. *id.* (2) p. 70.

Thoosa armata, n. sp., *id.* (6) pp. 89 & 90.

Thoosa hancocki, n. sp., *id.* (6) p. 89.

Thoosa radiata, n. sp., *id.* (6) pp. 89 & 90 (applied to one of the forms termed *T. bulbosa* by Hancock).

Trachyx hystrix, n. sp., *id.* (2) p. 69.

Tragosia fibrosa, n. sp., *id.* (2) p. 65.

Trochospongilla erinaceus, Ehrenberg; for description see SOVINSKY.

Yvesia guernei, n. sp., TOPSENT, (1) p. 30.

Yvesia pedunculata, n. sp. (1) p. 30.

Yvesia ridleyi, n. sp., *id.* (1) p. 30.

Yvesia hansenii, n. sp., *id.* (1) p. 30.

Yvesia pertusa, n. sp., *id.* (1) p. 31.

Yvesia richardi, n. sp., *id.* (1) p. 31.

Yvesia fallax, n. sp., *id.* (1) p. 31.

See also POČTA for descriptions of 26 species of fossil Sponges, 7 of which are new, and WEBER for descriptions of 4 new species of *Spongillidæ*.

PROTOZOA.

BY

CECIL WARBURTON, B.A.

I.—LIST OF PUBLICATIONS.*

- BALBIANI, E. G. (1) Sur la Structure intime du noyau du *Loxophyllum meleagris*. Zool. Anz. xiii, pp. 110-115 & 132-136, 9 figs. Abstr. in Arch. Z. expér. (2) viii, p. xv, and in J. R. Micr. Soc. 1890, p. 345.
- (2) Recherches expérimentales sur la mérotome des Infusoires ciliés. Rec. Z. Suisse, v, pp. 1-71.
- (3) Étude sur le Loxode. Ann. Micrograph. ii, pp. 401-431, 1 pl. Abstr. J. R. Micr. Soc. 1890, p. 615.
- BEDDARD, F. E. Abstract of his paper on a new Sporozoon parasitic in *Perichæta*. J. R. Micr. Soc. 1890, p. 52. [See Zool. Rec. xxvi, Prot., BEDDARD (1).]
- BERGH, R. S. Abstract of his paper on the nuclei of *Urostyla*. T. c. p. 345. [See Zool. Rec. xxvi, Prot., BERGH.]
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An amplification of his Beitrag (see Zool. Rec. xxvi, *Prot.*, ZSCHOKKE). The results are given in a tabulated form on pp. 52-59.

II.—SYSTEMATIC.

A.—GYMNOMYXA.

Class 1.—PROTEOMYXA.

Pseudospora (?) *lindstedtii*, n. sp., HARTOG.

Vampyrella incolor, n. sp., DE BRUYNE, p. 83, pl. v. *V. radiosa*, *V. agilis*, n. spp., PENARD, (3) p. 121, pl. i.

Gloidium granulerum, n. sp., *id.* p. 122.

Olpidium bryopsidis, n. sp., DE BRUYNE, p. 85, pl. v.

Class 3.—LOBOSA.

Amœba luteola, *A. undosa*, *A. geminata*, *A. striata*, *A. spatula*, *A. cirri-fera*, *A. gracilis*, n. spp., PENARD, (3) pp. 125-132, pl. ii. *A. vestita*, n. sp., *id.* p. 192. *A. ambulacralis*, n. sp., *id.* (2) p. 75.

Cochlipodium granulatum, *C. obscurum*, n. spp., *id.* (3) p. 134, pl. iii.

Diffugia saxicola, *D. elegans*, *D. bicornis*, *D. platystoma*, *D. avellana*, *D. fallax*, *D. lucida*, *D. lanceolata*, *D. bacillifera*, n. spp., *id.* pp. 138-148, pls. iii & iv.

Centropyxis lævigata, n. sp., *id.* p. 151, pl. v.

Arcella microstoma, *A. catinus*, *A. gibbosa*, *A. polypora*, n. spp., *id.* pp. 154-156, pls. v & vi.

Nebela longicollis, *N. lageniformis*, *N. tubulosa*, *N. galeata*, *N. bigibbosa*, *N. dentistoma*, *N. militaris*, n. spp., *id.* pp. 159-164, pls. vi & vii.

Ileleopora rosea, *I. sylvatica*, n. spp., *id.* p. 166, pl. vii.

Cryptodiffugia oviformis, n. sp., *id.* p. 168.

Pseudodiffugia hemisphærica, n. sp., *id.* p. 169.

Plagiophrys gracilis, n. sp., *id.* p. 173, pl. viii.

Assulina scandinavica, *A. minor*, n. spp., *id.* p. 176, pl. ix.

Euglypha filifera, *E. heterospina*, n. spp., *id.* p. 179, pl. ix.

Sphenoderia fissirostris, *S. dentata*, n. spp., *id.* p. 184, pl. x.

Trinema spinosum, *T. complanatum*, *T. lineare*, n. spp., *id.* p. 186, pls. x & xi.

Corythion pulchellum, n. sp., *id.* p. 189.

Czenkowskia flava and *C. attenuata*, n. spp., WAGNER.

Class 5.—HELIOZOA.

- Ciliophrys hyalina*, n. sp., PENARD, (1) p. 49, figs. 1-3.
Actinolophus capitatus, n. sp., *id.* p. 54, fig. 11.
Heterophrys tenella, n. sp., *id.* p. 56, figs. 13 & 14.
Acanthocystis myriospina, n. sp., *id.* p. 61, figs. 30-32.
✓ *Diplocystis*, n. g., with n. sp. *gracilis*, *id.* p. 63.
✓ *Artodiscus*, n. g., with n. sp. *saltans*, *id.* p. 64.

Class 6.—RETICULARIA.

- Cassidulina inexculta*, n. sp., FRANZENAU, p. 66, pl. iii.
Nodosaria callidula, *N. commenorabile*, *N. egregia*, *N. facile*, n. spp.,
id. p. 70, pl. iii.
Cristellaria spoliata, n. sp., *id.* p. 76, pl. iv.
Sagrina clavata, n. sp., *id.* p. 78, pl. iv.
Anomalina obtenebrata, n. sp., *id.* p. 83, pl. iv.
Rotalia abstrusa, n. sp., *id.* p. 85, pl. iv.
Articulina multilocularis, n. sp., BRADY & PARKER, p. 215, pl. xl.
Truncatulina mundula, n. sp., *id.* p. 228, pl. xlv.
Nonionina exponens, n. sp., *id.* p. 230, pl. xliii.
Spiroloculina papyracea, n. sp., BURROWS, SHERBORN, & BAILEY, p. 551,
pl. viii. *S. tateana*, n. sp., HOWCHIN, p. 3, figs. 4 & 5.
Miliolina excisa, n. sp., BRADY & PARKER, p. 215, pl. xl. *M. angularis*,
n. sp., HOWCHIN, p. 2, figs. 1-3.
Hauerina intermedia, n. sp., *id.* p. 4, fig. 6.
Discorbina cruciformis, n. sp., *id.* p. 12, figs. 13 & 14.
Orbitoides stellata, n. sp., *id.* p. 17, figs. 9-11.
✓ *Jullienella*, n. g., *fetida*, n. sp., SCHLUMBERGER, (2) p. 213, pl. vii.
Orbitolina andræci, n. sp., MARTIN.
✓ *Seabrookia*, n. g., *pellucida*, n. sp., BRADY, (1) p. 570.
Hyperammina palmiformis, n. sp., PEARCEY.

Class 7.—RADIOLARIA.

- Pharyngosphæra sicula*, n. sp., DREYER, (1) p. 475.
Carposphæra waltheri, n. sp., *id.* p. 476.
Thecosphæra zittelli, n. sp., *id.* p. 477.
Haliomma hystrix, n. sp., *id.* p. 478. *H. vetustum*, *H. cornutum*, n. spp.,
HINDE, p. 51.
Prunopyle longiseta, n. sp., DREYER, (1) p. 480.
Stylodictya armata, n. sp., *id.* p. 481.
Spongophacus stührii, *S. sículus*, n. spp., *id.* p. 491.
Dictyocoryne ovata, *D. triangulum*, n. spp., *id.* p. 495.
Ommatodiscus perichlamydium, n. sp., *id.* p. 498.
Spongopyle caltanissetæ, n. sp., *id.* p. 506.

- Spirema giltsehii*, n. sp., *id.* p. 509.
Larcopele drieschii, *L. spongiosa*, *L. herbstii*, n. spp., *id.* p. 510.
Dictyocephalus rüsti, n. sp., *id.* p. 516.
Dictyomitra callanisettæ, n. sp., *id.* p. 517.
Spongoplegma priscum, n. sp., HINDE, p. 48, pl. iii.
 ✓ *Diploplegma* n. g., *cinctum* n. sp., *id.* p. 48.
 ✓ *Staurodoras gracilis*, n. sp., *id.* p. 49, pl. iv.
 ✓ *Stauroplegma* n. g., with n. spp. *brevispina*, *compressum*, *barbatum*, and *diffusum*, *id.* p. 50, pls. iii & iv.
Acanthosphæra antiqua, n. sp., *id.* p. 51.
 ✓ *Dorysphæra* n. g., with n. spp. *reticulata*, *nucula*, and *laxa*, *id.* p. 53.
 ✓ *Doryplegma* n. g., with n. spp. *nasutum* and *gracile*, *id.* p. 53.
 ✓ *Dorydictyum* n. g., *simplex* n. sp., *id.* p. 54.
 ✓ *Triposphæra* n. g., with n. spp. *peachii*, *hastata*, *densa*, and *armata*, *id.* p. 55.
Sphærozoum priscum, p. 57, *S. patulum*, n. spp., *id.* p. 57.

B.—CORTICATA.

Class 1.—SPOROZOA.

- ✓ *Blanchardia* n. g., *cypricola* n. sp., WIERZEJSKI.
Coccidium gasterostei, n. sp., THIÉHOLAN, (1) p. 1214 : parasitic on *Gasterosteus aculeatus*. *C. sardinia*, n. sp., *id.* p. 1216 : parasitic in testicles of sardines.

Class 2.—FLAGELLATA.

- Paranema granulifera*, n. sp., PENARD, (2) p. 80.
Petalomonas quadrilineata, n. sp., *id.* p. 82.
 ✓ *Pteridomonas* n. g., with n. sp. *P. pulex*, *id.* p. 85.
Dinobryon bavaricum, n. sp., IMHOF, (5) p. 523. *D. bütschlii*, n. sp., *id.*
Gymnococcus cladophoræ, *G. licomphoræ*, n. spp., DE BRUYNE, pp. 59-71.
Asphelidium lacerans, n. sp., *id.* p. 74, pl. v.

Class 5.—CILIATA.

- ✓ *Fubrea salina*, n. g. & sp. (intermediate between *Bursaria* and *Stentor*), HENNEGUY (1).
Glenodinium sociale : provisional name for a Peridinian probably undescribed ; *id.*, (2) p. 627.
 ✓ *Spirodinium equi*, n. g. & sp., FIORENTINI, p. 15.
 ✓ *Triadinium caudatum*, n. g. & sp., *id.* p. 16.
 ✓ *Amphileptus flagellatus*, n. sp., ROUSSELET.
 ✓ *Didesmis*, n. g., with n. spp. *D. ovalis* and *D. quadrata*, FIORENTINI, (2) p. 51.

- ✓ *Paraisothricha*, n. g., with n. spp. *P. colpoidea*, *P. oblonga*, *P. ovalis*, *P. triangularis*, *P. ampulla*, *P. incisa*, *id.* p. 53.
 ✓ *Diplodinium*, n. g., FIORENTINI, (1) p. 87, n. spp., *D. vortex*, *D. maggii*, *D. bursa*, *D. dentatum*, *D. denticolatum*, *D. ecaudatum*, *D. rostratum*, *D. cattanei*, *id.* *D. uncinatum*, *D. unifasciculatum*; *id.* (2) pp. 11 & 12.
Entodinium rostratum, n. sp., *id.* p. 89. *E. valvatum*, *id.* (2) p. 13.
Bütschlia lanceolata, n. sp., *id.* p. 89.
 ✓ *Hastatella radians*, n. g. & sp., ERLANGER, p. 65, pl. xxix.
 See also BÜTSCHLI, (1) p. 265.

Class 6.—ACINETARIA.

Trichophyra angulata, n. sp., DANGEARD (2).

III.—MORPHOLOGY AND LIFE-HISTORY.

General.

POUCHET (2) treats of the structure, duration of life, and artificial feeding (with white of egg) of *Noctiluca*.

PENARD (3) publishes a monograph on the freshwater *Rhizopoda*. A full account of their structure and life-phenomena is followed by a systematic portion, which includes the description of many new species.

HARTOG describes a Monadine parasitic in *Suprolegnia* and discusses its relation to organisms previously observed by Lindstedt, Pringsheim, and Zopf. The mastigopod stage had not been observed by these botanists. The zoospores always appear in the evening, about nine o'clock. They soon penetrate the hyphæ, piercing the wall with a long pseudopodium. A "Heliozoid" form is then assumed. The changes induced in infested hyphæ are described. The pseudopodia next are retracted, and the body becomes spherical, giving the "zoocyst" stage. The nuclei subdivide, and then the protoplasm breaks up into zoospores. One of these bores through the cyst wall, and the others follow through the same hole. It never attacks green algæ as *Pseudospora parasitica* does.

BALBIANI (1) has studied the nucleus of *Loxophyllum meleagris*. It consists of twenty or more distinct segments or joints inclosed in a common enveloping membrane. The segments each contain one or more convoluted nuclear cords, and a granular intermediate substance. The cords are finely striated.

POUCHET (1) has found granular protoplasmic masses parasitic in the females of Copepods, which when passed out at the anus develop into Peridinean-like biflagellate forms.

GRASSI & FELETTI believe that malaria is due to amœbiform parasitic *Rhizopoda*. Ordinary malaria seems to be caused by the genus *Hæmameba malarie*, while *Laverania malarie* seems to be responsible for an irregular form of the disease. The observed flagellate forms are probably the results of degeneration.

Contractile Vacuole.

From his researches on various *Infusoria*, FABRE-DOMERGUE (1) concludes :—(1) The contractile vacuole is only the reservoir for a system of canals which perforate the ectoplasm. (2) It may be considered as a dilatation of a contractile channel. It may be single, or represented by a variable number of dilatations along the course of the channel. (3) It may be entirely absent, as in *Opalina*, but the system of contractile tubes always exists, and is the essential part of the arrangement.

Reproduction.

GIARD (1) follows Maupas in finding homologues of the polar bodies of *Metazoa* in the reproductive processes of Infusorians. The homology is most marked in the group *Ciliata*, where the conjugating forms are frequently quite different. Maupas' figures are used and his deductions extended.

POUCHET (2) discusses the reproduction of *Noctiluca*.

GRUBER discusses the phenomena of conjugation among various Ciliate types, and criticises the views of Hertwig and Maupas.

VERWORN discusses the structure and reproduction of *Diffugia lobostoma*.

THÉLOHAN (2) has studied the *Myxosporidia*, and arrives at the following results :—(1) The nucleus divides by karyokinesis. (2) The polar capsules are formed at the expense of small masses of plasma which are differentiated in the sporoblast and possess a nucleus. (3) The plasmic mass of the spore is derived from another portion of the sporoblast. It contains two nuclei, and often a vacuole whose contents are stained red-brown by iodine.

See also STUMMER.

IV.—PHYSIOLOGY.

SCHÜTT obtained three distinct pigments from the chromatophores of the *Peridinieæ*. The first, which he names "phycopyrrin," differs from chlorophyll chiefly in its solubility in water; the second he terms "peridin" ; and the third is either identical with or closely related to chlorophyll.

The pigment of *Euglena sanguinea* is closely related to and is perhaps a derivative of chlorophyll. Its formation seems to be connected with the intensity of the sun's rays. Cohn has named it "hæmatochromin." VISART.

POUCHET (2) discusses the effect of reagents on *Noctiluca*.

SCHÜRMAYER has an exhaustive paper on the effect of reagents upon *Protozoa*. After discussing the influence of heat and cold upon these

organisms, he details the effects of strychnin, antipyrin, cocain, anti-febrin, and chloralhydrate, exhibiting the results in each case in a tabular form.

MEUNIER finds nitrogenous matter in nummulitic rocks from Biarritz, which he therefore considers to contain an organic basis comparable to carbonaceous combustibles of vegetable origin.

The tentacles of *Suctorina* do not, as Hertwig supposes, play an active part in absorbing the prey. They are passive in the operation, and often remain quite motionless. The protoplasm of the body furnishes the real motive power, which is connected with the action of the contractile vacuoles. These are now known to be excretory in function. Their pumping motion induces a stream towards the interior of the animal, and is the real cause of suction. EISMOND (1).

See also PANETH.

V.—CLASSIFICATION.

BORGERT proposes to establish a special order of the *Mustigophora* to receive the *Dictyochidæ*. These forms are clearly separated from the *Radiolaria* by the absence of pseudopodia, and the occurrence of conjugation. A flagellum is present, but the siliceous skeleton distinguishes the group from other *Flagellata*. The name *Silicoflagellata* is suggested. Hertwig and Hæckel are mistaken in considering their tests isolated skeletal parts of *Phæodaria*. They are independent organisms.

VI.—GEOGRAPHICAL DISTRIBUTION.

For *Monadina* from the G. of Naples, see DE BRUYNE.

BURROWS treats of the red chalk *Foraminifera* from certain English localities.

For Scotch palæozoic *Radiolaria* see HINDE.

For Sicilian, DREYER (1).

FRANZENAU gives an account of some Hungarian *Foraminifera*.

For deep-sea *Foraminifera* from the Irish coast, see WRIGHT.

HALKYARD gives a list of 127 species and varieties of *Foraminifera* collected at Jersey. 35 genera and 8 families are represented. The *Rotalidæ* appear to be most numerous. Certain common British species, e.g., *Orbulina universa*, are entirely absent.

IMHOFF (1) concludes his list of the pelagic fauna of the mountain lakes of Carinthia. The *Flagellata* are represented by 3 species. *Dinobryon divergens* in six lakes, *D. elongatum* in two, and *D. bütschlii* in one. They were found in colonies, but not at the time of observation (July, August, and September) in such colossal numbers as always occur in spring and early summer. The *Dinoflagellata* were represented by *Cera-*

tium hirundinella and species of *Peridinium*. Among the Suctoria, *Podophrya cyclopum* was found in Lake Veldes.

IMHOF, O. E. (4) enumerates 10 hitherto known species of *Dinobryon*. Their geographical distribution is as follows :—

Germany.—*D. sertularia*, *D. divergens*, *D. elongatum*, *D. sociale*, *D. bavaricum*.

Russia.—*D. sertularia*, *D. divergens*, *D. elongatum*.

Gulf of Finland.—*D. sociale*, *D. sertularia*, *D. divergens*.

Sweden.—*D. elongatum* in the Harbour of Stockholm.

Austria.—*D. sertularia*, *D. sociale*, *D. divergens*, *D. elongatum*, *D. bütschlii*.

Italy.—*D. sociale*, *D. divergens*, *D. elongatum*, *D. petiolatum*.

Switzerland.—*D. sociale*, *D. sertularia*, *D. divergens*, *D. elongatum*, *D. cylindricum*.

The genus was only observed in two French lakes in Savoy.

PEARCEY gives a complete list of the *Foraminifera* hitherto found in the Faroe Channel. 180 species have been collected from the "warm," and 120 from the "cold" area.

See also HENSCHER, HENNEGUY, HOSIUS, WOODWARD, HOWCHIN, MÖBIUS, and PENARD.

INDEX TO GENERA AND SUBGENERA RECORDED AS NEW IN THIS VOLUME,

INCLUDING NEW NAMES FOR GENERA ALREADY CHARACTERIZED.

N.B.—A few genera omitted from the last volume are included in this Index.

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END OF THE TWENTY-SEVENTH VOLUME.

ERRATA.

Mollusca, p. 31, line 13, for "*id.*," read "SIMROTH."

„ 16, „ "*id.*," „ "SIMROTH."

Vermes, p. 1, line 22, for "19," read "23."

„ 26, after "*Deodrilus*," add "*Desmogaster*."

„ 28, „ "*Pygmæodrilus*," add "*Sabellarites*."

p. 2, „ 1, „ "POLYCHÆTA," add "*Hekaterobranchus*."

THE ZOOLOGICAL SOCIETY OF LONDON.

THIS Society was instituted in 1826, under the auspices of Sir HUMPHREY DAVY, Bart., Sir STAMFORD RAFFLES, and other eminent individuals, for the advancement of Zoology and Animal Physiology, and for the introduction of new and curious subjects of the Animal Kingdom, and was incorporated by Royal Charter in 1829.

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The Meetings of the Society for General Business are held at the Office on the Thursday following the third Wednesday in every month of the year, except in September and October, at Four P.M.

The Meetings for Scientific Business are held at the Office twice a month on Tuesdays, except in July, August, September, and October, at half-past Eight o'clock P.M.

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FELLOWS pay an Admission Fee of £5, and an annual Contribution of £3, due on the 1st of January, and payable in advance, or a Composition of £30 in lieu thereof; the whole payment, including the Admission Fee, being £35.

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FELLOWS have Personal Admission to the Gardens with Two Companions daily, upon signing their names in the book at the entrance gate.

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Persons who wish to become Fellows of the Society are requested to communicate with the undersigned.

PHILIP LUTLEY SCLATER, M.A., Ph.D., F.R.S.,
Secretary.

3 Hanover Square, W.,
October 1st, 1891.

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OF THE
ZOOLOGICAL SOCIETY OF LONDON
FOR
SCIENTIFIC BUSINESS.
(AT 3 HANOVER SQUARE, W.)
1891-92.

1891.

TUESDAY, NOVEMBER 3 and 17 | TUESDAY, DECEMBER 1

1892.

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*The Chair will be taken at half-past Eight o'clock in the Evening
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THE scientific publications of the Zoological Society of London are of two kinds — “Proceedings,” published in an octavo form, and “Transactions,” in quarto.

According to the present arrangements, the “Proceedings” contain not only notices of all business transacted at the scientific meetings, but also all the papers read at such meetings and recommended to be published in the “Proceedings” by the Committee of Publication. A large number of coloured plates and engravings are attached to each annual volume of the “Proceedings,” to illustrate the new or otherwise remarkable species of animals described in them. Amongst such illustrations, figures of the new or rare species acquired in a living state for the Society’s Gardens are often given.

The “Proceedings” for each year are issued in four parts, on the first of the months of June, August, October, and April, the part published in April completing the volume for the preceding year.

The “Transactions” contain such of the more important communications made to the scientific meetings of the Society as, on account of the nature of the plates required to illustrate them, are better adapted for publication in the quarto form. They are issued at irregular intervals.

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[October, 1891.]

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